

Chevron Environmental Management Company

2013 Site Assessment Report

Former Chevron Facility 91785 321 S. Elm Street Toppenish, Washington

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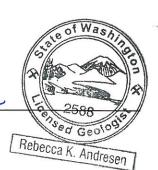
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1. Introduction

On behalf of Chevron Environmental Management Company (Chevron), and at the request of the United States Environmental Protection Agency (EPA), ARCADIS U.S., Inc. (ARCADIS) has prepared this 2013 Site Assessment Report for the former Chevron Facility 91785 located at 321 S. Elm Street in Toppenish, Washington (site). The site is located on the Yakima Indian Reservation. The site and surrounding area are shown on **Figures 1** and **2**.

2. Site Description

The site comprises an approximately 0.98-acre, rectangular-shaped parcel located at the intersection of West First Street and South Elm Street. The surrounding area consists mainly of commercial development along South Elm Street.

The site is currently an operating Texaco-branded retail petroleum service station and convenience store owned by Gary and Karen Young. According to historical reports, Chevron operated the site as a service station until 1995. Three gasoline underground storage tanks (USTs), associated pump islands, product lines, three hoists and an oil/water separator were removed from the site in 1995. The existing service station facilities were constructed in 1997.

The former service station building is located in the central portion of the site. The former USTs and pump islands were located in the southern portion of the site. A Site Plan showing the former and existing facility layouts is presented on **Figure 2**.

2.1 Site Geology and Hydrogeology

The site is situated in the Toppenish Creek basin on the eastern slope of the Cascade Range in south-central Washington. The Toppenish Creek Basin is the northernmost of three major river basins in the Yakima Indian Reservation. Elevations in this basin range from 5,100 feet in the mountains on the western drainage divide, to 750 feet on the eastern valley floor. The topography is dominated by east-west-trending valleys and rounded ridges cut by streams. The Ahtanum and Toppenish ridges form the basin's northern and southern boundaries, respectively.

The Toppenish Creek Basin is delineated by three principal hydraulic units: young valley fill, old valley fill and basalt. The young valley fill unit includes the upper part of

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the Ellensburg Formation and alluvium, which consists of silty sand, gravel and cemented gravel. The old valley fill unit comprises mostly silt, sand, gravel and clay. The basalt unit is layered in a sequence of lavas that underlie the entire Toppenish Creek Basin.

The hydrology of the Toppenish Creek Basin comprises multiple aquifers and surface and groundwater interactions (U.S. Geological Survey 1987).

Soil at the site generally comprises dense silty sand with gravel to a total depth explored of approximately 20 feet below ground surface (bgs). The depth to groundwater at the site during the September 2013 site assessment was approximately 10 to 13 feet bgs. However, the irrigation season in the Toppenish valley begins in April and runs through October. During these months, groundwater depth can fluctuate from 5 to 7 feet in response to the irrigation recharge. The lowest levels occur in late March and the highest levels occur in late summer. Groundwater flow direction at the site is to the northwest.

2.2 Site History

Evidence of a release at the site was discovered in 1991 during a site assessment. In 1991, five groundwater monitoring wells (MW-1 through MW-5) were installed as part of a groundwater monitoring program. Routine groundwater monitoring was performed at the site from 1991 to 1997. Concentrations of total petroleum hydrocarbons as gasoline (TPH-G), total petroleum hydrocarbons as diesel (TPH-D) and benzene were detected exceeding Model Toxics Control Act (MTCA) Method A groundwater cleanup levels (GCLs) in well MW-2. Benzene was also detected above the MTCA Method A GCL in historical groundwater samples from wells MW-3 and MW-4. Concentrations of TPH-G, TPH-D, and benzene, toluene, ethylbenzene and xylenes (BTEX) were not detected above MTCA Method A GCLs after 1995. Wells MW-1, MW-3, MW-4 and MW-5 were abandoned in March 1997 (USEPA 1997).

In May 1995, the product USTs, used oil UST and heating oil UST were removed. Additionally, three hoists, an oil/water separator, pump islands and associated piping were removed. Approximately 300 cubic yards (cy) of soil were excavated from the former UST location and transported off site. Soil analytical results indicated that the soil samples were below soil cleanup levels (SCLs), with the exception of an area near the former gasoline USTs at 13 feet bgs near MW-2. An air sparge system was installed in MW-2 and was effective in reducing benzene levels in groundwater in that well. Well MW-2 was destroyed in 1997 during additional source removal.

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During site redevelopment in 1997, an additional 1,491 cy of petroleum-impacted soil were excavated from the new UST complex and canopy footings and transported off site for disposal. One in-situ soil sample, collected 13.5 feet from the south sidewall of the UST excavation, had concentrations of TPH-G, ethylbenzene and xylenes above the MTCA SCL. One additional soil sample, collected at 16 feet bgs from the base of the excavation, had TPH-G concentrations above the MTCA Method A SCL (PACIFIC 1997).

In April 1998, an additional site assessment was conducted to define the extent of impacted soil at the site. Four soil borings (P-1 through P-4) were advanced and soil and groundwater samples were collected from the borings. Concentrations of TPH-G, TPH-D, TPH-HO and BTEX detected in the soil samples were below MTCA Method A SCLs. Three of the four groundwater samples collected had concentrations of TPH-G, TPH-D, TPH-HO, and BTEX above the MTCA Method A GCLs, with the highest concentration in boring P-3, which is located closest to well MW-2. Groundwater samples were collected directly from the borehole. Soil and groundwater data are shown in **Tables 1** and **2**, respectively (PACIFIC 1998).

In June 2012, three soil borings (B-1 through B-3) and three temporary monitoring wells (B-1-W through B-3-W) were advanced and installed to complete characterization of residual phase hydrocarbon impacts at the site to a depth of 20 feet bgs. The three soil borings (B-1 through B-3) were advanced in the southern portion of the site near the pump islands and the UST pits; in areas adjacent to the highest historical petroleum impacts. The soil samples collected from B-2 and B-3 contained one or more constituents of concern (COC) at concentrations greater than the MTCA Method A SCLs. The impacts were found at a depth of 12.5, 15, 17.5 and 19.5 feet bgs from boring B-2 and depths of 12 feet, and 15 feet bgs to 17.5 feet bgs from sample B-3. The samples collected at depths greater than 14 feet bgs are located in the smear or saturated zone. The soil samples collected from B-1 did not contain concentrations greater than the MTCA Method A SCLs. Groundwater samples collected from B-2 (B-2-W) and B-3 (B-3-W) contained one or more COCs at concentrations greater than the MTCA Method A GCLs (ARCADIS 2012).

3. Soil Delineation

On September 10 and 11, 2013, four soil borings were advanced and completed as monitoring wells (MW-6, MW-7, MW-8, and MW-9) to characterize the remaining hydrocarbons impacts at the site to approximately 20 feet bgs. Three monitoring wells (MW-6, MW-7, and MW-8) were installed in the southern portion of the site near the pump islands and the UST pits. Monitoring well MW-6 was installed to confirm extent of groundwater impacts to the west; monitoring well MW-7 was installed to confirm

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results from 2012 groundwater results in B-2-W; and monitoring well MW-8 was installed to confirm results of the former UST excavation sidewall samples collected in 1997 and 2012 groundwater results in B-3-W. One monitoring well (MW-9) was installed to evaluate groundwater conditions to the north/upgradient of impacts detected in boring B-2 and B-3 in 2012. Monitoring well locations are shown on **Figure 2**.

Each soil boring was cleared using soil vacuum truck and air knife technology to a minimum of 8 feet bgs to assure utility clearance. Soil borings MW-6, MW-7, and MW-8 were cleared to 9 feet bgs, whereas MW-9 was cleared to 8 feet bgs. The soil was screened and classified every two feet. At two foot intervals, the air knife was stopped and a hand auger was used to advance an additional two feet in order to collect an undisturbed sample. Soil characteristics and photoionization detector (PID) readings were logged for each soil sample collected. At eight to nine feet bgs the soil borings were advanced using a hollow stem auger drill rig. The truck-mounted hollow stem auger drill rig and air knife services were provided and operated by Cascade Drilling Inc. (CDI) of Woodinville, Washington. Undisturbed soil samples were collected for characterization and field screening every two feet using a split spoon to approximately 20 feet bgs or the bottom of the boring.

Boring logs were prepared by an ARCADIS field geologist using the Unified Soil Classification System (USCS) and are included in **Appendix A**. Monitoring well start cards are included in **Appendix B**. Field screening of soil samples was performed using a PID and visual inspection methods. Soil samples with the highest PID readings, at depths of previous impacts (13 to 16 feet bgs), and at the bottom of each boring were submitted to a Washington State Department of Ecology (DOE) certified laboratory, Eurofins (Lancaster) Laboratories Inc., in Lancaster, Pennsylvania, for analysis. Soil samples were analyzed for the following:

- TPH-G by NWTPH-Gx
- TPH-D and TPH-HO by NWTPH-Dx with silica gel cleanup procedures
- BTEX and methyl tertiary-butyl ether (MTBE) by USEPA Method 8021B using methanol preservation according to Method 5035.

Based on field screening results, three soil samples were collected for analysis during the advancement of each soil boring. Soil samples from boring MW-6 were collected at depths of 12.5-14.5 feet bgs, 15-16.5 feet bgs, and 19-20 feet bgs. Soil samples from boring MW-7 were collected at depths of 9-11.5 feet bgs, 15-16.5 feet bgs, and 19.5-20 feet bgs. Soil samples from boring MW-8 were collected at depths of 8-9.5 feet bgs,

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15-16.5 feet bgs, and 19-20 feet bgs. Soil samples from boring MW-9 were collected at depths of 9.5-11 feet bgs, 15-16.5 feet bgs, and 19.5-21 feet bgs. A blind duplicate sample was collected from boring MW-8 at 15 -16.5 feet bgs and submitted to the analytical laboratory for NWTPH-Gx, NWTPH-Dx, NWTPH-HO, BTEX, and MTBE analysis.

3.1 Soil Boring Analytical Results

The soil sample collected from MW-7 contained one or more COCs at concentrations greater than their respective MTCA Method A SCLs. The soil sample collected from soil boring MW-7 at a depth of 15-16.5 feet bgs (MW-7-15-16.5) contained a TPH-G concentration (340 mg/kg) greater than the MTCA Method A SCL of 100 mg/kg.

The soil sample collected from MW-7-15-16.5 feet bgs contained an MTBE concentration below the laboratory reporting limit, but the laboratory limit was raised above the MTCA Method A SCL of 0.1 mg/kg (0.56 mg/kg). The remaining soil samples did not contain concentrations greater than their respective MTCA Method A SCLs.

Soil sample analytical results are included in Table 1 and Figure 3.

Field notes are included in **Appendix C**. The analytical laboratory data reports are included as **Appendix D**.

4. Monitoring Well Installation and Groundwater Sampling

On September 11, 2013, four soil borings were completed as monitoring wells (MW-6, MW-7, MW-8, and MW-9). Upon reaching the desired total depth of the borehole, a groundwater monitoring well was installed. Each well was constructed of dedicated 2-inch-diameter, Schedule 40 polyvinyl chloride casing with a slot size of 0.02 inch. A sand pack using 10-20 silica sand was placed around the screened interval. The screened interval was set based on field observations of the water table during drilling. The 10 foot screens were set at 8 to 18 feet bgs in monitoring wells MW-7, MW-8, and MW-9. The 10 foot screen for MW-6 was set at 9.5 to 19.5 feet bgs. The screens were set to anticipate seasonal groundwater fluctuations of approximately 5 to 7 feet, to ensure the screen will intercept the water table throughout the year. The sand pack was placed from the bottom of the borehole to approximately one foot above the screened interval. The sand pack was followed by hydrated bentonite chips to two feet below ground surface to create a bentonite-cement seal. The wells were fitted with sealing and locking well caps and traffic-rated well boxes to provide secure wellheads. The actual depths of monitoring wells are as follows: MW-6 at 19.5 feet bgs, MW-7 at

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20 feet bgs, MW-8 at 20.5 feet bgs, and MW-9 at 21 feet bgs. Well construction details are included in the boring logs (**Appendix A**).

4.1 Monitoring Well Development and Surveying

On September 12, 2013, the monitoring wells were surveyed to include location and top of casing elevations. In addition, site features and boundaries were surveyed.

On October 8, 2013, the monitoring wells were developed by CDI. The monitoring wells were surged over the length of the screen using a surge block until the water was relatively free of suspended sediments. Approximately 20 gallons were purged from each monitoring well prior to groundwater sampling. Monitoring well locations are shown on **Figure 2**.

4.2 Groundwater Elevation and Flow Direction

Prior to collecting the groundwater samples, the depth-to-groundwater was measured in monitoring wells MW-6 through MW-9. The depth-to-groundwater during this event ranged between 10.73-11.93 feet (ft) below top of casing (btoc) from monitoring wells MW-9 and MW-6, respectively. Groundwater elevations during this sampling event ranged from 752.30 (MW-7) to 752.54 (MW-8) ft above mean sea level (msl). The site is relatively flat; therefore groundwater flow direction is indeterminate at this time. Historically, groundwater elevations fluctuate to the southeast and northwest. Additional quarterly groundwater elevations will be measured in 2014 to determine groundwater flow direction. Groundwater elevation data are summarized in **Table 2** and presented in **Figure 4**.

4.3 Groundwater Analytical Results

On October 8, 2013, groundwater samples were collected from monitoring wells (MW-6 through MW-9), using a peristaltic pump and submitted to Lancaster Laboratory in Lancaster, Pennsylvania for analysis. Groundwater samples were analyzed for the following:

- TPH-G by NWTPH-Gx
- TPH-D and TPH-HO by NWTPH-Dx with silica gel cleanup procedures
- BTEX and MTBE by USEPA Method 8260B.

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A blind duplicate sample was collected from monitoring well MW-6 and submitted to the analytical laboratory for TPH-Gx, TPH-Dx, TPH-HO, GRO, BTEX, and MTBE analyses.

The groundwater sample collected from monitoring well MW-7 contained one COC at a concentration greater than their respective MTCA Method A GCLs. The groundwater sample collected from monitoring well MW-7 contained a TPH-G concentration (2,000 μ g/L) greater than the MTCA Method A GCL of 800 μ g/L.

The groundwater sample collected from MW-7 contained a benzene concentration equal to the MTCA Method A GCL of 5 μ g/L. The remaining groundwater soil samples did not contain concentrations greater than their respective MTCA Method A GCLs.

Groundwater analytical results are presented in Table 3 and Figure 5.

Field notes are included in **Appendix B**. The analytical laboratory data reports are included as **Appendix C**.

5. Management of Investigation Derived Wastes

Soil cuttings and waste water generated during the field activities were contained in Department of Transportation-approved, 55-gallon steel drums and appropriately labeled. Following receipt of laboratory analytical data the soil and water investigation derived waste (IDW) was transported off-site October 31, 2013 and will be disposed off-site by Chemical Waste Management of the Northwest.

6. Conclusions

In order to characterize the remaining petroleum hydrocarbon soil and define the extent of groundwater impacts at the site, four soil borings were advanced and completed as monitoring wells. Three monitoring wells (MW-6, MW-7, and MW-8) were installed in the southern portion of the site near the pump islands and UST pads. One monitoring well (MW-9) was installed to evaluate groundwater conditions to the north/upgradient of impacts detected in borings B-2 and B-3 in 2012.

Soil samples were collected and submitted for analytical analysis during the advancement of soil borings at depths with the highest PID readings and at depths of previous impacts (13 to 16 feet bgs). Additional soil samples from the terminus depth of each boring were submitted for laboratory analysis to evaluate the vertical extent of petroleum hydrocarbon impacts.

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The soil sample collected from boring MW-7 contained one or more COCs at concentrations greater than the MTCA Method A SCLs. The impacts were found at a depth of 15-16.5 ft bgs. The soil samples collected from borings MW-6, MW-8, and MW-9 did not contain concentrations greater than the MTCA Method A SCLs.

The groundwater sample collected from MW-7 contained one COC at a concentration greater than the MTCA Method A GCL and one COC equal to the MTCA Method A GCL.

The installation of the four monitoring wells delineated the vertical extent of the remaining hydrocarbons impacts at the site to approximately 20 feet bgs. In addition, the horizontal extent of remaining hydrocarbons was delineated in the southern portion of the site near the pump islands and the UST pits and north/upgradient of 2012 borings B-2 and B-3. Monitoring well MW-6 confirmed soil and groundwater impacts are not present to the west, near boring B-1. The samples collected from monitoring well MW-7 indicated soil and groundwater contained TPH-G greater than the MTCA Method A SCL at 15.6 ft bgs and GCL in the groundwater sample, which confirmed results from 2012 in boring B-2. Monitoring well MW-8 confirmed soil and groundwater impacts are not present, near the former UST excavation sidewall samples, which confirmed 1997 and 2012 groundwater results in abandoned monitoring well MW-3 and temporary monitoring well B-3-W. Monitoring well MW-9 confirmed soil and groundwater impacts are not present north/upgradient of B-2 and B-3, in the area of the abandoned monitoring well MW-5.

Quarterly groundwater sampling events will be conducted in 2014. If you have any questions or would like to discuss this further, please contact Greg Montgomery, ARCADIS project manager, at 206.726.4742.

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7. References

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Tables

Table 1

Soil Analytical Data

Former Chevron Facility 91785 321 South Elm Street Toppenish, Washington

				So	il Analytical Results					
Location	Sample Depth/ Interval	Sample Date	TPH-G	TPH-D	ТРН-НО	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE
MTCA M	ethod A Soil Cleanu	ıp Levels	100	2,000	2,000	0.3	7	6	9	0.1
NSW-13.5	13.5	07/30/97	ND	ND		ND	ND	ND	ND	
SSW-7	7	07/30/97	ND	11		ND	ND	ND	ND	
SSW-10	10	07/30/97	9.41	25.3	NA	ND	ND	ND	ND	
SSW-13.5	13.5	07/30/97	4,860	204	NA	ND	5.19	249	13	
ESW-13.5	13.5	07/30/97	ND	10.6	NA	ND	ND	ND	ND	
WSW - 13.5	13.5	07/30/97	ND	ND	NA	ND	ND	ND	ND	
SBF-16	16	07/30/97	162	157	NA	ND	0.0968	ND	5.48	
NBF-16	16	07/30/97	ND	12.5	NA	ND	ND	ND	ND	
F1WSW-12	12	08/14/97	ND	ND	61.2	ND	ND	ND	ND	
F2-12	12	08/14/97	ND	ND	ND	ND	ND	ND	ND	
F3-12	12	08/14/97	ND	ND	ND	ND	ND	ND	ND	
F4-12	12	08/14/97	ND	ND	ND	ND	ND	ND	ND	
F5-12	12	08/14/97	ND	ND	ND	ND	ND	ND	ND	
P-1-12	12	01/29/98	1.36	ND	29.5	ND	ND	ND	ND	
P-2-12.6	12.6	01/29/98	ND	ND	ND	ND	ND	ND	ND	
P-3-12	12	01/29/98	ND	ND	26.7	ND	ND	ND	ND	
P-4-13	13	01/29/98	ND	ND	67.5	ND	ND	ND	ND	
B-1-4	4	6/11/2012	<1.4	<3.5	<12	<0.0027	0.021	0.0047	0.019	<0.0068
B-1-6	6	6/11/2012	<1.1	4.2	68	< 0.0022	0.023	0.0056	0.027	< 0.0054
B-1-8	8	6/12/2012	<1.7	6.9	130	< 0.0034	0.013	0.0063	0.039	<0.0086
B-1-20	20	6/12/2012	<1.2	<3.5	<12	< 0.0025	0.068	0.012	0.046	< 0.0062
B-2-12.5	12.5	6/12/2012	240	<3.3	<11	< 0.35	2.7	2.8	16	<1.9
B-2-15	15	6/12/2012	290	<3.4	<11	< 0.33	2.4	3	17	<1.9
B-2-17.5	17.5	6/12/2012	59	<3.9	<13	0.02	1	0.69	3.9	<0.016
B-2-19.5	19.5	6/12/2012	110	<3.7	<13	0.055	0.66	0.77	4.4	<0.19
Dup-1	19.5	6/12/2012	30	<3.5	<12	0.019	0.18	0.23	1.4	0.066
B-3-2	2	6/12/2012	<1.1	5.9	58	<0.0022	0.032	0.0098	0.035	<0.0054
B-3-6	6	6/12/2012	<1.3	<3.6	<12	< 0.0026	0.031	0.0064	0.033	<0.0064
B-3-12	12	6/12/2012	1,400	18	<12	0.54	38	20	130	1.5
B-3-15	15	6/12/2012	2,300	16	<12	1.8	77	34	200	<8.1
B-3-17.5	17.5	6/12/2012	160	<3.5	<12	0.13	4.8	2.1	13	<0.59
MW-6	12.5-14.5	9/11/2013	<1.1	<3.4	<11	<0.0054	<0.0054	<0.0054	<0.016	<0.054
	15-16.5	9/11/2013	2.1	<3.5	<12	<0.0059	<0.0059	<0.0059	<0.018	<0.059
	19-20	9/11/2013	<1.6	<4.0	<13	<0.0080	<0.0080	<0.0080	<0.024	<0.080
MW-7	9-11.5	9/11/2013	<0.8	<3.2	13	<0.0042	0.0053	<0.0042	<0.013	<0.042
	15-16.5 ¹	9/11/2013	340	<3.5	<12	<0.26	<0.54	0.70	6.6	<0.56
	19.5-20 ¹	9/11/2013	93	<4.3	<14	<0.048	<0.12	0.15	1.3	<0.081

Table 1

Soil Analytical Data

Former Chevron Facility 91785 321 South Elm Street Toppenish, Washington

	Soil Analytical Results														
Location	Sample Depth/ Interval	Sample Date	TPH-G	TPH-D	ТРН-НО	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE					
MTCA M	ethod A Soil Clean	up Levels	100	2,000	2,000	0.3	7	6	9	0.1					
MW-8	8-9.5	9/11/2013	23	17	18	<0.0056	0.014	0.018	0.12	< 0.056					
	15-16.5	9/11/2013	2.5	<3.6	<12	< 0.0061	0.0095	<0.0061	<0.018	< 0.061					
BD-1	15-16.5	9/11/2013	2.5	<3.7	<12	< 0.0060	0.0097	<0.0060	<0.018	< 0.060					
	19-20	9/11/2013	<1.3	<3.7	<12	< 0.0064	<0.0064	<0.0064	<0.019	< 0.064					
MW-9	9.5-11	9/11/2013	<1.0	<3.1	<10	<0.0051	<0.0051	<0.0051	<0.015	< 0.051					
	15-16.5	9/11/2013	<1.1	<3.4	<11	< 0.0055	<0.0055	<0.0055	<0.017	< 0.055					
	19.5-21	9/11/2013	<1.0	<3.3	<11	< 0.0052	<0.0052	< 0.0052	< 0.016	< 0.052					

Notes:

All results are reported in milligrams per kilogram (mg/kg).

MTCA = Model Toxics Control Act

TPH-G = total petroluem hydrocarbons as gasoline was analyzed by NWTPH-Gx.

TPH-D = total petroluem hydrocarbons as diesel was analyzed by NWTPH-Dx.

TPH-HO = total petroluem hydrocarbons as heavy oil was analyzed by NWTPH-HO.

Benzene, toluene, ethylbenzene, and total xylenes (BTEX) and methyl tertiary-butyl ether (MTBE) analyzed by EPA Method 8260B or EPA Method 8021B.

EPA = Environmental Protection Agency

ND = not detected

Highlighted cell indicates concentration exceeds respective soil cleanup level.

-- = not applicable/not available.

< = not detected greater than the laboratory reporting limit indicated.

DUP = Duplicate sample

BD = Blind duplicate sample

The most recent samples are shown in bold.

¹ Reporting limits were raised due to interference from the sample matrix.

Table 2 Groundwater Elevation Data

Former Chevron Facility 91785 321 South Elm Street Toppenish, Washington

Monitoring Well (Casing elevation in feet)	Date Measured	LNAPL Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)		
MW-1	05/28/91		11.51	87.60		
99.11	04/07/92		13.30	85.81		
	07/08/92		11.83	87.28		
	10/19/92		12.48	86.63		
	03/23/93		13.66	85.45		
	06/24/93		11.75	87.36		
	09/02/93		11.25	87.86		
	12/08/93		13.42	85.69		
	03/16/94					
	06/15/94					
	09/01/94					
	11/07/94					
	03/01/95					
	05/24/95					
	08/21/95					
	11/15/95					
	02/28/96		12.27	86.84		
Abandoned	03/13/97					
MW-2	05/28/91		11.93	87.59		
Duplicate	05/28/91					
99.52	04/07/92		13.63	85.89		
Duplicate	04/07/92					
	07/08/92		12.23	87.29		
	10/19/92		12.88	86.64		
Duplicate	10/19/92					
_ upc	03/23/93		14.08	85.44		
	06/24/93		12.15	87.37		
Dilution	09/02/93		11.67	87.85		
2	12/08/93		13.82	85.70		
	03/16/94		14.26	85.26		
	06/15/94		13.04	86.48		
	09/01/94		12.99	86.53		
	11/07/94		13.53	85.99		
	03/01/95		13.79	85.73		
	05/24/95		12.40	87.12		
	08/21/95		12.40	88.03		
	11/15/95		13.24	86.28		
	02/28/96					
	02/20/90		14.12	85.39		
	05/15/97		14.13	85.39 86.42		
Doots	05/15/97		13.10	86.78		
Destroyed	01/00/91		12.74	00.70		

Table 2 Groundwater Elevation Data

Former Chevron Facility 91785 321 South Elm Street Toppenish, Washington

Monitoring Well (Casing elevation in feet)	Date Measured	LNAPL Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)	
MW-3	05/28/91		11.22	87.62	
98.84	04/07/92		12.91	85.93	
	07/08/92		11.53	87.31	
	10/19/92		12.06	86.78	
	03/23/93		13.35	85.49	
	06/24/93		13.36	85.49	
	09/02/93		10.96	87.88	
	12/08/93		13.11	85.73	
	03/16/94		14.28	84.56	
	06/15/94		12.33	86.51	
	09/01/94		12.28	86.56	
	11/07/94		13.79	85.05	
	03/01/95		13.03	85.81	
	05/24/95		11.70	87.14	
	08/21/95				
	11/15/95		12.68	86.16	
	02/28/96		12.15	86.69	
Abandoned	03/13/97				
MW-4	05/28/91		11.97	87.63	
99.60	04/07/92		13.67	85.93	
	07/08/92		12.27	87.33	
	07/08/92				
	10/19/92		12.93	86.67	
	10/19/92		14.09	85.51	
	03/23/93		11.44	88.16	
	06/24/93		11.66	87.94	
	09/02/93		13.83	85.77	
	12/08/93		13.55	86.05	
	03/16/94		13.04	86.56	
	06/15/94		13.01	86.59	
	09/01/94		13.54	86.06	
	11/07/94		13.75	85.85	
	03/01/95				
	05/24/95				
	08/21/95				
	11/15/95				
	02/28/96				
Abandoned	03/13/97				

Table 2 Groundwater Elevation Data

Former Chevron Facility 91785 321 South Elm Street Toppenish, Washington

Monitoring Well (Casing elevation in feet)	Date Measured	LNAPL Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)
MW-5	05/28/91		12.56	87.66
100.22	04/07/92		14.25	85.97
	07/08/92		12.89	87.33
	10/19/92		13.53	86.69
	03/23/93		14.69	85.53
	06/24/93		12.79	87.43
	09/02/93		12.27	87.95
	12/08/93		14.44	85.78
	03/16/94			
	06/15/94			
	09/01/94			
	11/07/94			
	03/01/95			
	05/24/95			
	08/21/95			
	11/15/95			
	02/28/96			
Abandoned	03/13/97			
MW-6 ^e	10/08/13		11.93	752.33
764.26				
MW-7 ^e	10/08/13		11.14	752.30
763.44				
MW-8 ^e	10/08/13		11.00	752.54
763.54				
MW-9^e 763.12	10/08/13		10.73	752.39

Notes:

Groundwater monitoring data and laboratory analytical results prior to May 18, 2007, was provided by ENSR (AECOM).

DRY = Less than 0.40 feet of water in well at time of gauging.

-- = Not measured or not present

LNAPL = Light, non-aqueous phase liquid

Well elevations were surveyed relative to mean sea level.

The depths to groundwater were measured from the top of the well casings.

^a Well was installed in October 2002.

^b Well was installed in March 2003.

^c Well was installed in June 2003.

^d Well was installed in November 2005 and surveyed with other site wells in May 2006.

^e Wells were installed in September 2013 and surveyed by OTAK on September 12, 2013.

Table 3

Groundwater Analytical Data

Former Chevron Facility 91785 321 South Elm Street Toppenish, Washington

				Groun	dwater Analytical Ro	esults				
Well	Sample Date	TPH-G	TPH-D	ТРН-НО	Lead	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE
	od A Groundwater nup Levels	800	500	500	15	5	1,000	700	1,000	20
MW-1	05/28/91	ND	760		1.6	ND	ND	ND	ND	
	04/07/92	ND	ND		21	ND	ND	ND	ND	
	07/08/92	ND	ND		2.4	ND	ND	ND	ND	
	10/19/92	ND	ND		4.7	ND	ND	ND	ND	
	03/23/93	ND	ND		ND	ND	ND	ND	ND	
	06/24/93	ND	ND		ND	ND	ND	ND	ND	
	09/02/93	ND	ND		ND	ND	ND	ND	ND	
	12/08/93	ND	ND		ND	ND	ND	ND	ND	
	03/16/94									
	06/15/94									
	09/01/94									
	11/07/94									
	03/01/95									
	05/24/95									
	08/21/95									
	11/15/95									
	02/28/96									
Abandoned	03/13/97									
MW-2	05/28/91	3,000	1,600		17	0.74	2.9	29	190.00	
Duplicate	05/28/91	3,400	1,800		5.2	0.76	2.9	29	210.00	
	04/07/92	350	ND		13	7	0.52	1.1	0.73	
Duplicate	04/07/92	340	ND		7.8	7.4	0.62	1.4	1.00	
	07/08/92	410	ND		4.1	43	30	2.5	3.10	
	10/19/92	290	ND		2.7	5.9	21	1.6	4.40	
Duplicate	10/19/92	220	ND		3.4	5.3	19	1.4	3.90	
	03/23/93	ND	ND		8.6	2.4	1.1	ND	1.00	
	06/24/93	ND	ND		ND	6.4	0.7	0.5	1.70	
	09/02/93	1,000	ND		ND	130	120	23	180.00	
	12/08/93	ND	ND		4.5	4.4	8.1	2.6	9.20	
	03/16/94	ND	ND			ND	ND	ND	ND	
	06/15/94	110	ND			6.9	6.9	2.7	13.00	
	09/01/94	120	ND			8.3	9.7	6.3	16.00	
	11/07/94	200	ND			7.7	25	11	49.00	
	03/01/95	140	ND			14.9	10	5.6	18.00	
	05/24/95	160	390			2	3.4	6.8	13.00	
	08/21/95	850	1,700			31	0.93	ND	7.20	
	11/15/95	380	ND			2	7.2	9.7	36.00	
	02/28/96									
	03/13/97	ND				ND	ND	ND	1.63	
	05/15/97	58				ND	ND	ND	8.04	
Destroyed	07/08/97	288	ND			ND	0.726	8.69	30.30	

Table 3

Groundwater Analytical Data

Former Chevron Facility 91785 321 South Elm Street Toppenish, Washington

				Groun	dwater Analytical Re	sults				
Well	Sample Date	TPH-G	TPH-D	ТРН-НО	Lead	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE
	od A Groundwater nup Levels	800	500	500	15	5	1,000	700	1,000	20
MW-3 Abandoned MW-4	05/28/91 04/07/92 07/08/92 10/19/92 03/23/93 06/24/93 09/02/93 12/08/93 03/16/94 06/15/94 09/01/94 11/07/94 03/01/95 05/24/95 05/24/95 01/15/95 02/28/96 03/13/97 05/28/91 04/07/92 07/08/92 07/08/92 07/08/92 03/23/93 06/24/93 09/02/93	ND ND 340 630 130 ND 170 ND	310.0 ND		4.9 82 5.4 6.9 ND ND ND ND	ND ND ND 1140 14 ND 17 ND ND ND ND 9.4 52 ND	ND ND ND 17 21 0.6 ND 6.8 ND	ND ND ND 8.4 7.2 3.1 ND 3.4 ND	ND ND ND 57 100 4.7 ND 32 ND ND ND 1 33 ND ND 1 33 ND ND ND 1 33 ND	
Abandoned	12/08/93 03/16/94 06/15/94 09/01/94 11/07/94 03/01/95 05/24/95 08/21/95 11/15/95 02/28/96 03/13/97	ND 230 ND ND ND 	ND 230 ND ND ND 	 	ND	52 ND ND ND ND 	ND ND ND ND ND	ND ND ND ND ND	ND ND ND ND ND	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

Table 3

Groundwater Analytical Data

Former Chevron Facility 91785 321 South Elm Street Toppenish, Washington

				Groun	dwater Analytical Re	esults															
Well	Sample Date	TPH-G	TPH-D	ТРН-НО	Lead	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE											
	od A Groundwater nup Levels	800	500	500	15	5	1,000	700	1,000	20											
MW-5	05/28/91	ND	1,800		3.2	ND	ND	ND	ND												
	04/07/92	ND	ND		12	ND	ND	ND	ND												
	07/08/92	ND	ND		2.6	ND	ND	ND	ND												
	10/19/92	ND	ND		4.7	ND	ND	ND	ND												
	03/23/93	ND	ND		ND	ND	ND	ND	ND												
	06/24/93	ND	ND		ND	ND	ND	ND	ND												
	09/02/93	ND	ND		ND	ND	ND	ND	ND												
	12/08/93	ND	ND		ND	ND	ND	ND	ND												
	03/16/94																				
	06/15/94																				
	09/01/94																				
	11/07/94																				
	03/01/95																				
	05/24/95																				
	08/21/95																				
	11/15/95																				
	02/28/96	ND	ND		ND	ND	ND	ND	ND												
Abandoned	03/13/97																				
P-1	01/29/98	3,550	1,040	3,030		8.8	17.5	180.0	271.00												
P-2	01/29/98	7,430	2,910	ND		36.4	7.1	102.0	86.40												
P-3	01/29/98	1,680	6,540	ND		6.7	1.3	19.3	15												
P-4	01/29/98	ND	476	ND		ND	ND	ND	ND												
B-1-W	6/12/2012	83	<30	<69		<0.2	4.2	1.5	10	<0.3											
B-2-W	6/12/2012	43,000	140	<67		47	2,100	1,200	6,500	130											
B-3-W	6/12/2012	130,000	180	<70		350	16,000	3,000	20,000	71											
DUP	6/12/2012	130,000	200	<72		350	16,000	3,100	20,000	66											
MW-6	10/08/13	89	<29	<68		<0.5	<0.5	<0.5	<0.5	<0.5											
DUP	10/08/13	<50 <29		<67		<0.5	<0.5	<0.5	<0.5	<0.5											
MW-7	10/08/13	2,000	74	<68		5	<0.5	3	39	<0.5											
MW-8	10/08/13	440	<29	<69		<0.5	<0.5	0.6	0.7	<0.5											
MW-9	10/08/13	<50	<29	<67		<0.5	<0.5	<0.5	<0.5	<0.5											

Notes:

All results are reported in micrograms per liter (ug/l)

TPH-G = total petroluem hydrocarbons as gasoline was analyzed by NWTPH-Gx.

TPH-D = total petroluem hydrocarbons by diesel was analyzed by NWTPH-Dx; 2012 and 2013 samples analyzed with silica gel cleanup.

TPH-HO = total petroleum hydrocarbons as heavy oil was analyzed by NWTPH-HO.

Benzene, toluene, ethylbenzene, total xylenes (BTEX) and methyl tertiary-butyl ether (MTBE) analyzed by EPA Method 8260B or EPA Method 8021B.

EPA = Environmental Protection Agency

Lead analyzed by EPA Method 7421 (Total Lead).

MTCA = Model Toxics Control Act

MTCA Method A Cleanup level 800 if benzene is present or 1,000 if benzene is not present

ND = not detected

Highlighted cell indicates concentration exceeds respective groundwater cleanup level.

-- = not applicable/not available.

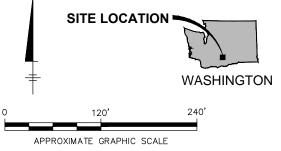
< = not detected greater than the laboratory reporting limit indicated.

DUP = Duplicate sample

The most recent samples are shown in bold.

Figures





PLOTTED: 1/7/2014 3:29 PM BY: RICHARDS, JIM

PLOTSTYLETABLE: PLTFULL.CTB

LD;(Opi) PIC;(Opi) PM:(Reqd) TM;(Opi) LYR;(Opi)Oh=*;OFF=*REF* 91785/B0047667/0004,00003/SAR Oct 2013/B0047667B01.dwg LAYOUT: 1 SAVED: 1/7/2014 3;29 PM ACADVER: 18.1S (LMS TECH) PAGESETUP:

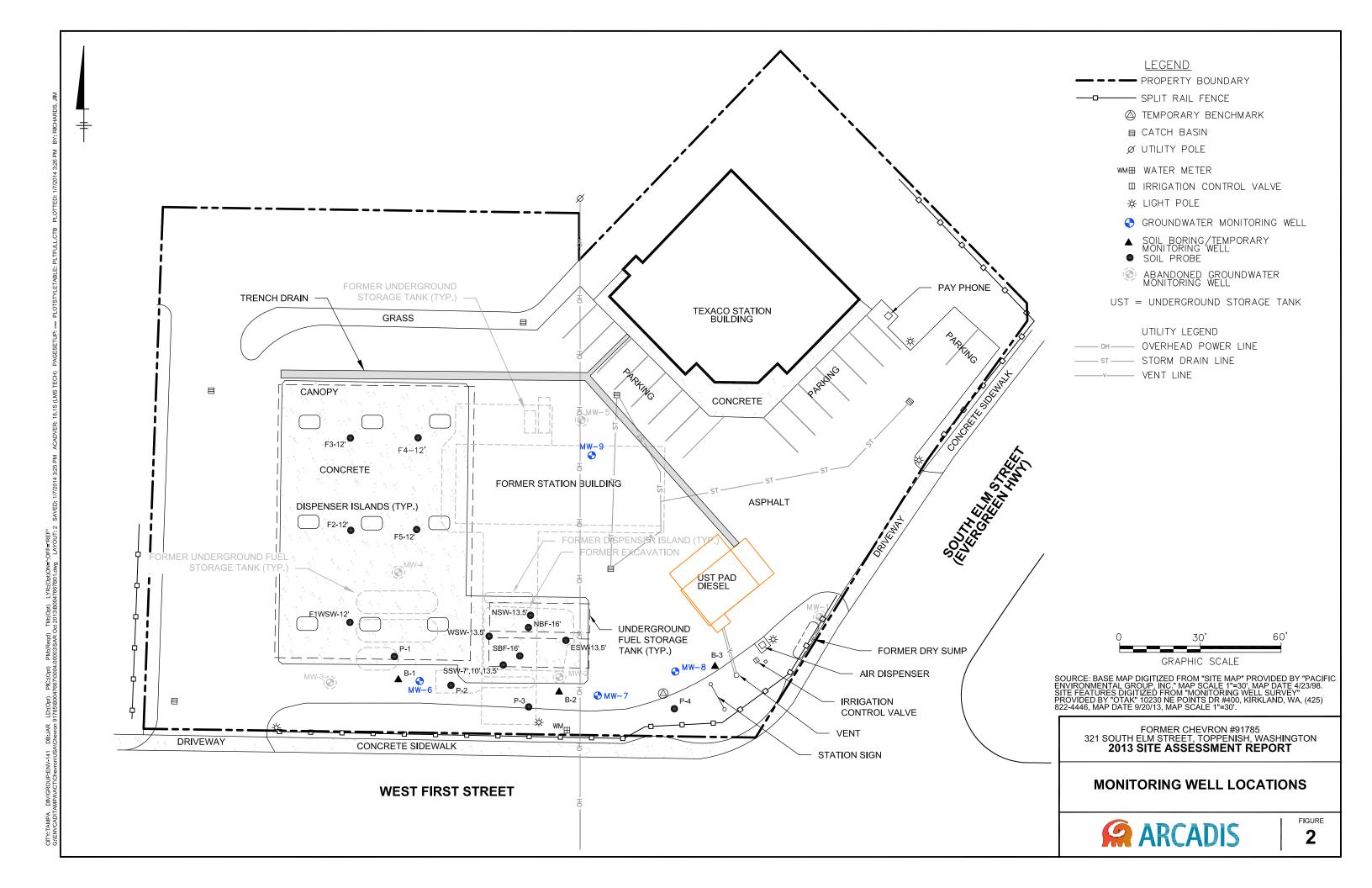
FORMER CHEVRON #91785
321 SOUTH ELM STREET, TOPPENISH, WASHINGTON
2013 SITE ASSESSMENT REPORT

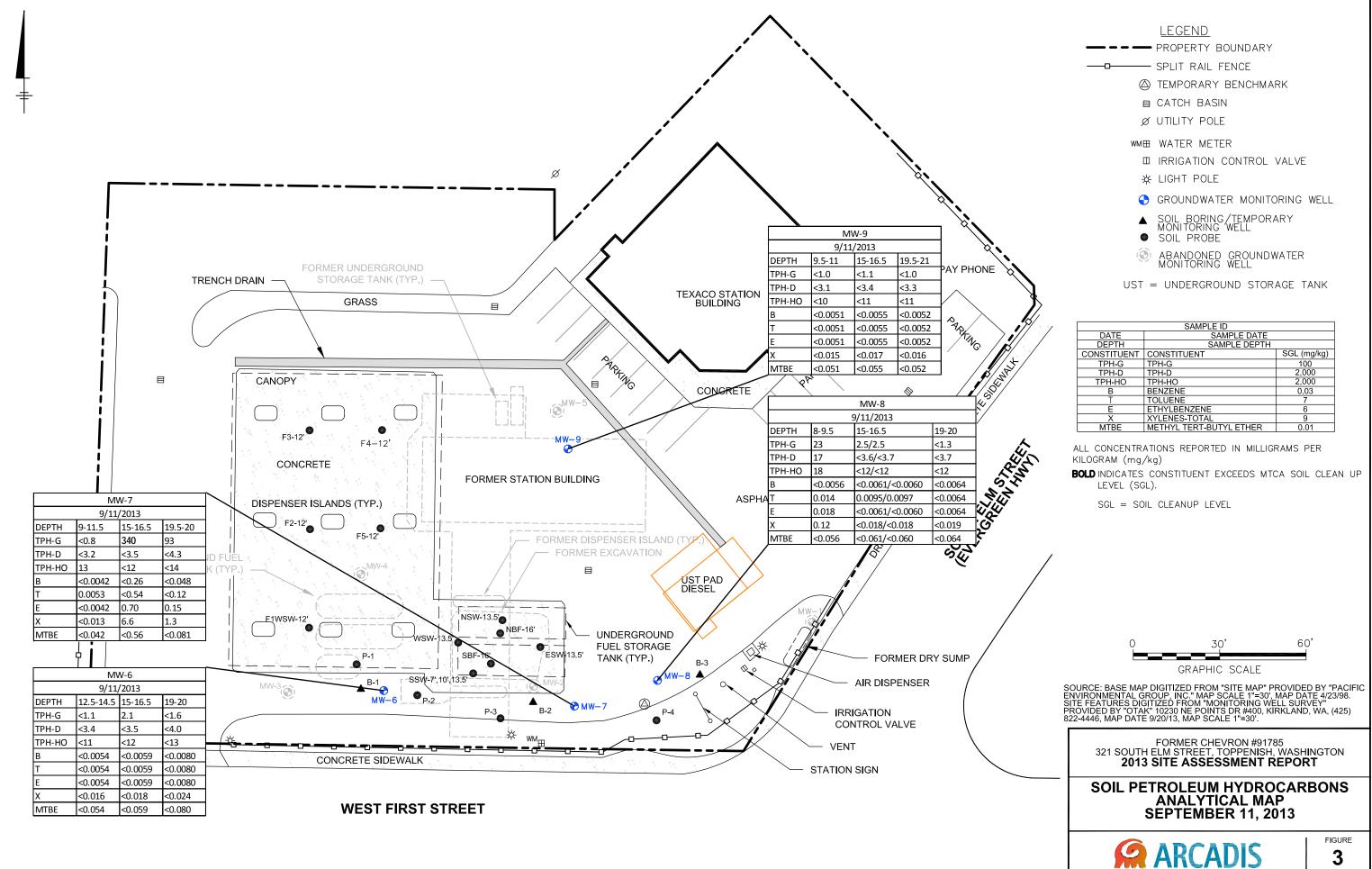
SITE LOCATION MAP

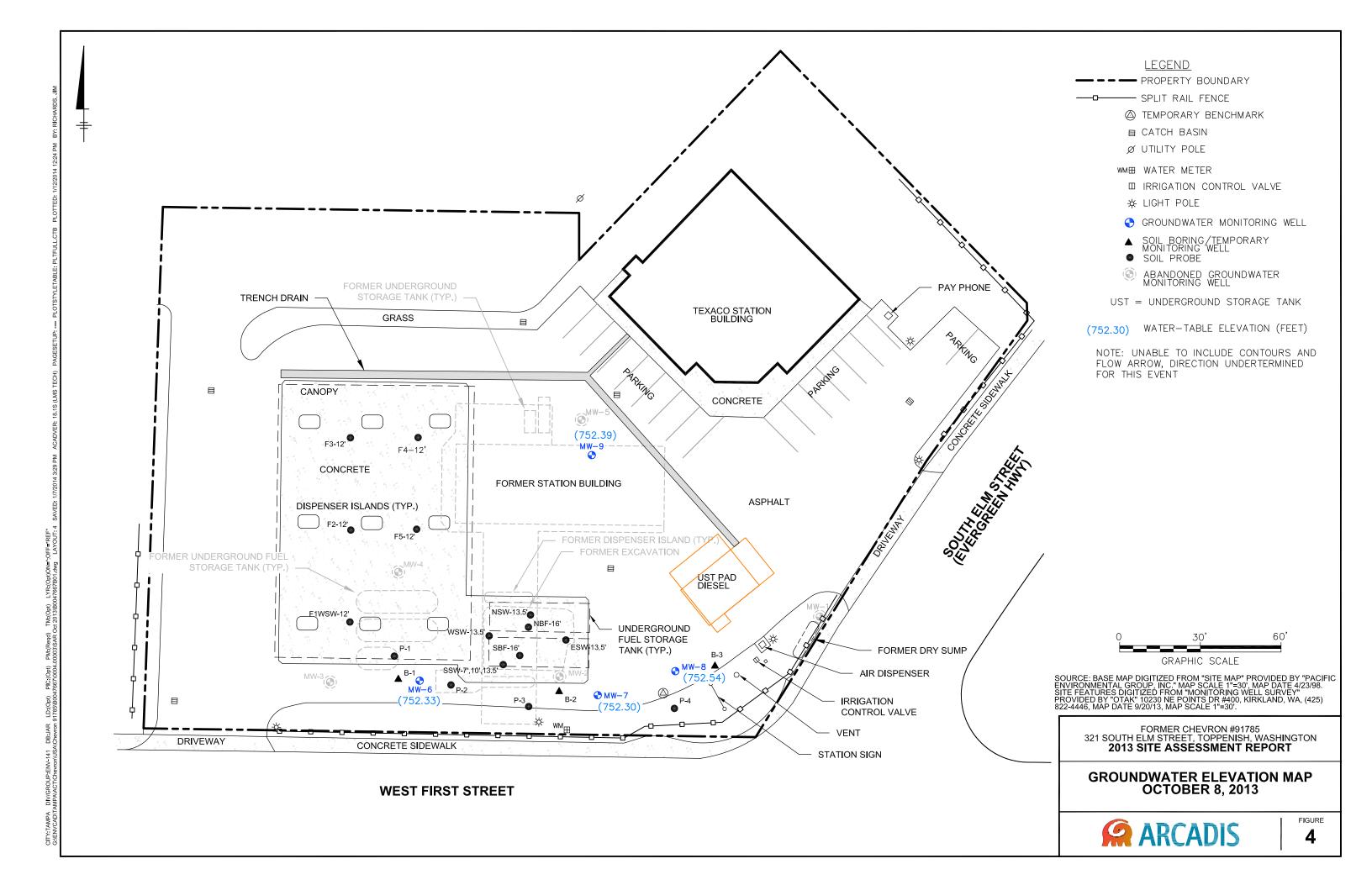


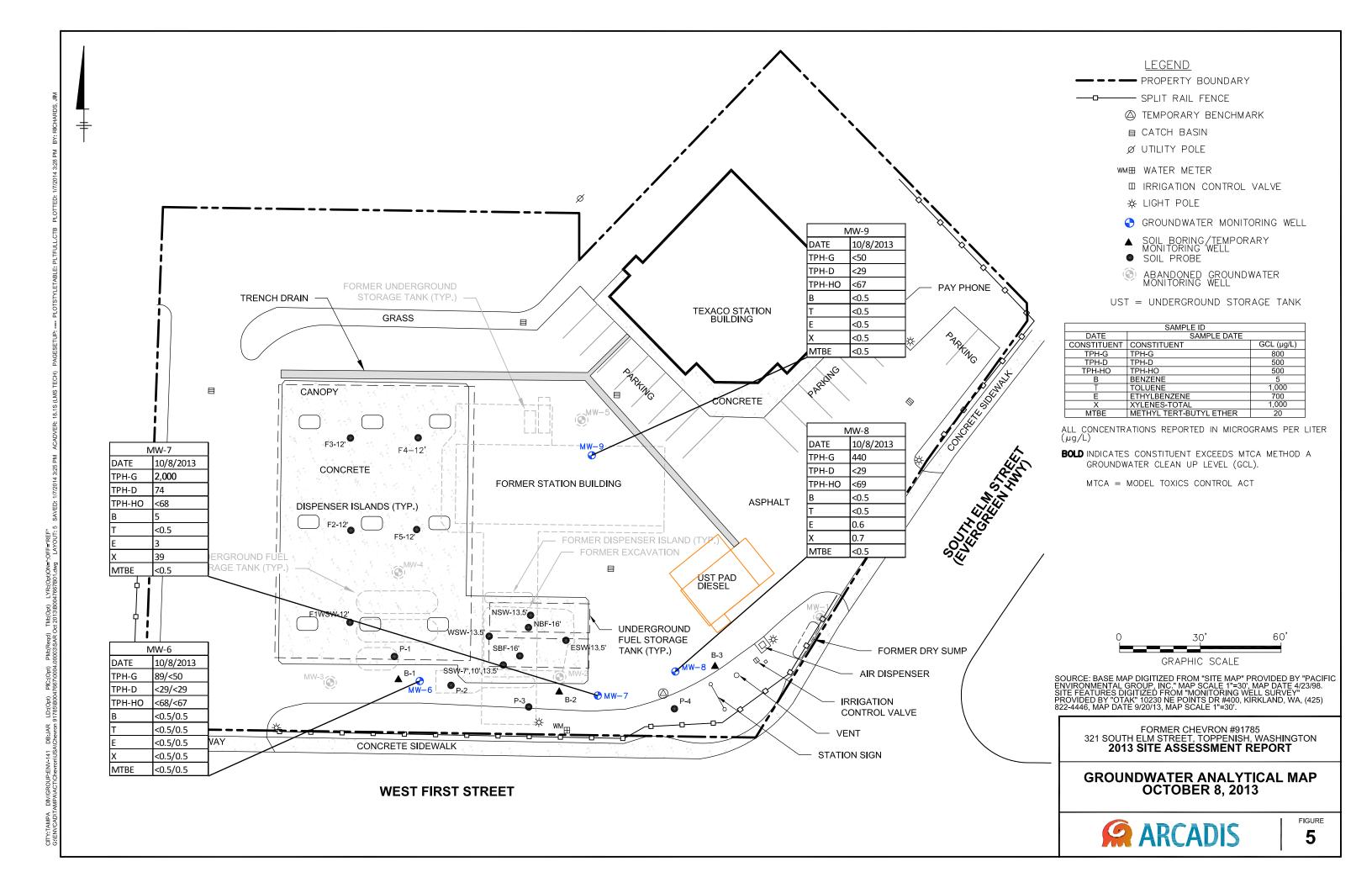
FIGURE

1









Appendix A

Boring Logs

Date Start/Finish: 9/10/20013 - 9/11/2013 Drilling Company: Cascade Drilling
Driller's Name:
Drilling Method: Vac Truck / Hollow Stem Auger
Auger Size: 8" OD
Rig Type:

Sampling Method: Hand Auger / Split Spoon

Northing:

Easting: Casing Elevation: NA

Borehole Depth: 19.5 bgs Surface Elevation:

Descriptions By: Ryan Brauchla

Well/Boring ID: MW-6

Client: Chevron EMC

Location: Chevron Facility No. 91785 321 S Elm St, Toppenish, WA

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
	-											Flush-mount Monument Locking J-Plug
	-	1	0- 8				2.5		SM	::: :	Brown fine to medium grained silty SAND (60%), poorly sorted, subangular to subrounded with loose non-plastic Silt (30%), and some rounded pebble to cobble sized Gravel, damp, hardness increases with depth. Brown fine to medium grained silty SAND, poorly sorted, subangular to subrounded with loose non-plastic Silt, and some rounded pebble to cobble	Concrete
5	-5 -						1.1		SM	===	sized Gravel (15- 20%)(large cobbles encountered at 5 ft bgs), damp, hardness increases with depth. Light brown fine sandy SILT, compact, non-plastic, fine subrounded Sand, occassional large Cobbles, Organics (roots), dry.	2-inch Schedule 40 PVC Riser Bentonite Chips
	-	2	8- 9.5	1	10 17 22	39	1.9		МН		Light brown gravelly SILT, dense, non-plastic, large angular to rounded Cobbles (Gravel content increases with depth), dry.	
10	-10 -	4	9.5- 11 11- 12.5	0	50/6" 30		0.7	-	MH		No recovery.	2
	-	5	12.5- 14	1	30 8 13	21	0.7	l V	GP		Very dark brown pebble to cobble sized sandy GRAVEL, poorly sorted, angular to rounded, coarse subangular basaltic Sand matrix, medium density, wet.	Water encountered at 13 ft bgs.
15	-15 -	7	14- 15 15- 16.5	1.5	14 16	29	20.0	<u> </u>	SP		Very dark brown coarse gravelly basaltic SAND, dense, poorly sorted, cobble to pebble sized gravel, hydrocarbon-like odor.	# 2/12 Silica Sand 2-inch Schedule 40 PVC 0.010" Screen
	frastro								lings		Remarks: bgs = Below Ground Surface; NA = Not Available; PID = Photoionization Detector; NM = Not Measured; ppm = Parts Per Million; PVC = Polyvinyl Chloride Hand cleared to 8 ft bgs.	Water Level Data Date Depth Elev. Depth measured from top of casing

Client: Chevron EMC Well/Boring ID: MW-6

Site Location:

Chevron Facility No. 91785 321 S Elm St, Toppenish, WA Borehole Depth: 19.5 bgs

DЕРТН	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
								/\				(3月3)
-	-	190	16.5- 18.5 18.5- 20	0	31 50/6"		22.5		SP	•	Very dark brown coarse gravelly basaltic SAND, dense, poorly sorted, cobble to pebble sized gravel, hydrocarbon-like odor.	# 2/12 Silica Sand 2-inch Schedule 40 PVC 0.010" Screen
								l X		•	Refusal at 19.5 ft bgs.	
20	-20							$\perp \wedge$			Nelusal at 19.5 It bys.	
- 25 30 	-25 - -25 - - -30 - - -35 -											
	ARCADIS Infrastructure · Water · Environment · Buildings								lings		Remarks: bgs = Below Ground Surface; NA = Not Available; PID = Photoionization Detector; NM = Not Measured; ppm = Parts Pe Million; PVC = Polyvinyl Chloride Hand cleared to 8 ft bgs.	Date Depth Elev. Depth measured from top of casing

Date Start/Finish: 9/10/20013 - 9/11/2013 **Drilling Company:** Cascade Drilling **Driller's Name:**

Drilling Method: Vac Truck / Hollow Stem Auger Auger Size: 8" OD

Rig Type:

Sampling Method: Hand Auger / Split Spoon

Northing:

Easting: Casing Elevation: NA

Borehole Depth: 20 ft bgs Surface Elevation:

Descriptions By: Ryan Brauchla

Well/Boring ID: MW-7

Client: Chevron EMC

Location: Chevron Facility No. 91785 321 S Elm St, Toppenish, WA

DEPTH	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
		0									Flush-mount Monument Locking J-Plug
	1	8				2.3		GW		Pea GRAVEL. Sandy GRAVEL (70%), poorly sorted, well rounded, size ranges from pebbles to cobbles, brown sub angular to sub rounded poorly sorted Sand matrix with trace low plasticity fines.	Concrete 2-inch Schedule 40 PVC Riser
 	2	8- 9.5	1.5	18 30 29	59	0.3		GP		Brown sandy GRAVEL (70%), poorly sorted, well rounded, size ranges from pebbles to cobbles, brown sub angular to sub rounded poorly sorted Sand	Bentonite Chips
- 10 -10 -	3	9.5- 11 11- 15	1.5	18 19 13	32	1.6		GP GP		matrix with trace low plasticity fines, very dense, damp. Brown sandy GRAVEL (70%), poorly sorted, well rounded, cobble sized, brown sub angular to sub rounded poorly sorted Sand matrix with trace low plasticity fines, dense, damp.	Water encountered at 11 ft bgs.
	5	15- 16.5	1.5	16 50/6"		1257		SP		Very dark brown coarse gravelly basaltic SAND, dense, poorly sorted, cobble to pebble sized Gravel, wet, very strong hydrocarbon-like odor.	# 2/12 Silica Sand
Infrasti								lings		Remarks: bgs = Below Ground Surface; NA = Not Available; PID = Photoionization Detector; NM = Not Measured; ppm = Parts Per Million; PVC = Polyvinyl Chloride Hand cleared to 8 ft bgs.	Water Level Data Date Depth Elev. Depth measured from top of casing
Project: B	0047	667.	0004	ļ	Tem	plate	e:\L	_ogF	lot 7	2007 Templates\boring_well HSA 2007 WL analytical USCS.ldfx	Page: 1 of

Client: Chevron EMC Well/Boring ID: MW-7 Borehole Depth: 20 ft bgs Site Location: Chevron Facility No. 91785 321 S Elm St, Toppenish, WA PID Headspace (ppm) Sample Run Number Analytical Sample Geologic Column Sample/Int/Type Recovery (feet) Well/Boring Blow Counts ELEVATION USCS Code Stratigraphic Description N - Value Construction DEPTH Dark brown to black coarse to medium grained basaltic SAND, poorly sorted, 2-inch Schedule 40 PVC 0.010" 16.5-19.5 very dense, hydrocarbon-like odor. Screen # 2/12 Silica Sand 7 19.5- 0.5 50/6" 83.3 End of boring at 20 ft bgs. - 30 -30 35 -35 -

ARCADIS
Infrastructure · Water · Environment · Buildings

Remarks:

bgs = Below Ground Surface; NA = Not Available; PID = Photoionization Detector; NM = Not Measured; ppm = Parts Per Million; PVC = Polyvinyl Chloride Hand cleared to 8 ft bgs.

water Level Data						
Date	Depth	Elev.				
Depth me	asured from top	of casing				

Date Start/Finish: 9/10/20013 - 9/11/2013 **Drilling Company:** Cascade Drilling **Driller's Name:**

Drilling Method: Vac Truck / Hollow Stem Auger Auger Size: 8" OD

Rig Type:

Sampling Method: Hand Auger / Split Spoon

Northing:

Easting: Casing Elevation: NA

Borehole Depth: 20.5 ft bgs Surface Elevation:

Descriptions By: Ryan Brauchla

Well/Boring ID: MW-8

Client: Chevron EMC

Location: Chevron Facility No. 91785 321 S Elm St, Toppenish, WA

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
_	_											Flush-mount Monument Locking J-Plug
_	-	1	0- 8				0.1		SC		Dark brown clayey SAND with Gravel, poorly sorted, subangular to subounded, medium plasticity fines (mostly clay), poorly sorted subrounded gravel ranging from pea gravel to medium cobbles, weak cementation, damp.	Concrete
- 5	-5-								GP		GRAVEL (rounded Boulders).	2-inch Schedule 40 PVC Riser Bentonite Chips
-	-	2	8- 9.5	1.5	18 20 50	70	10.0		GW		No Recovery. Pea GRAVEL. Pea GRAVEL. Brown sandy GRAVEL, poorly sorted, angular to rounded, cobble sized, poorly sorted angular to subrounded Sand with trace non-plastic fines, very dense, damp.	
- -10	-10 -	3	9.5- 11 11- 15	0	50/6"						No Recovery.	Water encountered at 10.7 ft bgs.
-	-											# 2/12 Silica Sand 2-inch Schedule 40 PVC 0.010" Screen
-15	-15 -	5	15- 16.5	1.5	20 21 20	41	40.9	l V	GP		Very dark brown gravelly basaltic SAND, poorly sorted, angular to rounded, pebble to cobble sized Gravel, wet, slight hydrocarbon-like odor.	
5.00	frastro								lings		Remarks: bgs = Below Ground Surface; NA = Not Available; PID = Photoionization Detector; NM = Not Measured; ppm = Parts Per Million; PVC = Polyvinyl Chloride Hand cleared to 8 ft bgs.	Depth measured from top of casing

Client: Chevron EMC Well/Boring ID: MW-8

Site Location:

Chevron Facility No. 91785 321 S Elm St, Toppenish, WA Borehole Depth: 20.5 ft bgs

Date Start/Finish: 9/10/20013 - 9/11/2013 **Drilling Company:** Cascade Drilling **Driller's Name:**

Drilling Method: Vac Truck / Hollow Stem Auger Auger Size: 8" OD

Rig Type:

Sampling Method: Hand Auger / Split Spoon

Northing:

Easting: Casing Elevation: NA

Borehole Depth: 21 ft bgs Surface Elevation:

Descriptions By: Ryan Brauchla

Well/Boring ID: MW-9

Client: Chevron EMC

Location: Chevron Facility No. 91785 321 S Elm St, Toppenish, WA

DEPTH	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
-	_										Flush-mount Monument Locking J-Plug
-	1 -	0- 8				2.5		SM		Asphalt. Brown fine to medium silty SAND (about 60%), poorly sorted, subangular to	Concrete
-	_					2.9		ML		subounded Sand, soft noń plastic Śilt (about 35%), trace subrounded pebbles (about 5%). Brown to dark olive brown sandy SILT (about 75%), non-plastic, soft, angular to subangular fine Sand (about 15%), damp.	2-inch Schedule
-5 -5 -	-					1.7		ML		Brown to dark olive brown sandy SILT (about 75%), non-plastic, soft, angular to subangular fine Sand (about 15%), damp.	40 PVC Riser Bentonite Chips
-	2	8- 9.5	1.5	13 14 15		0.5	-	SP		Brown to dark brown fine to coarse grained gravelly SAND, poorly sorted, angular to subrounded, cobble-sized rounded Gravel, medium dense, damp.	
- 10 -10	3	9.5- 11 11- 15	1.0	20 50/6"		2.2				Brown to dark brown fine to coarse grained gravelly SAND, poorly sorted, angular to subrounded, cobble-sized rounded Gravel, very dense, damp.	Water encountered at 10.7 ft bgs.
-	- -										# 2/12 Silica Sand 2-inch Schedule 40 PVC 0.010" Screen
—15 —15	5	15- 16.5	1.0	50/6"		1.8	\bigvee	SP		Brown to dark brown fine to coarse grained gravelly SAND, poorly sorted, angular to subrounded, cobble-sized rounded Gravel (Gravel content increases with depth), very dense, damp.	
2000	Structi							linas		Remarks: bgs = Below Ground Surface; NA = Not Available; PID = Photoionization Detector; NM = Not Measured; ppm = Parts Per Million; PVC = Polyvinyl Chloride Hand cleared to 8 ft bgs.	Water Level Data Date Depth Elev.
Infrastructure · Water · Environment · Buildings Project: B0047667.0004 Template:\LogPlot 7\									12007 Tomplatochoring well HSA 2007 W/Length final HSCS Life.	Depth measured from top of casing	
Project:	B004	7667.	UU04	ŀ	ıem	ıpıate	e:\l	∟ogF	¹iot 7	\2007 Templates\boring_well HSA 2007 WL analytical USCS.ldfx	Page: 1 o

Client: Chevron EMC Well/Boring ID: MW-9 Borehole Depth: 21 ft bgs Site Location: Chevron Facility No. 91785 321 S Elm St, Toppenish, WA PID Headspace (ppm) Sample Run Number Analytical Sample Geologic Column Sample/Int/Type Recovery (feet) Well/Boring **Blow Counts** ELEVATION USCS Code Stratigraphic Description N - Value Construction DEPTH 2-inch Schedule 40 PVC 0.010" 16.5-19.5 Screen # 2/12 Silica Sand 22 23 27 19.5-21 Dark brown sandy GRAVEL, poorly sorted, angular to rounded, pebble to cobble sized, poorly sorted medium to coarse grained subangular to rounded Sand with trace fines , lots of slightly oxidized basalt, very dense, wet. 20 3.2 End of boring at 21 ft bgs 30 -30

9	AR	CA	DI	S
Infrastruc	Name of Street, Street			THE COURSE OFFI

Remarks:

bgs = Below Ground Surface; NA = Not Available; PID = Photoionization Detector; NM = Not Measured; ppm = Parts Per Million; PVC = Polyvinyl Chloride Hand cleared to 8 ft bgs.

Water Level Data									
Date Depth Elev.									
Depth me	asured from top	of casing							

- 35 *- 35 -*

ARCADIS

Appendix **B**

Monitoring Well Start Cards



Notice of Intent to Construct an Resource Protection Well

Notification Number

RE08960

This form and required fees **MUST BE RECEIVED** by the Department of Ecology **72 HOURS BEFORE** you construct a well.

Submit one completed form for each job site and required fee (check or money order only) to: Department of Ecology Cashiering Unit, P.O. Box 47611, Olympia, WA 98504-7611

NOTE: Please print. Processing your Notice of Intent may be delayed if all fields are not filled in completely.												
Property Owner Texacc)				Phone	Numbe	r (206) 726	-4704				
Mailing Address C/o Arcadis			City	Seattle			State WA	Zip Code	98101			
Agent (if different from about	ve) Ard	adis		Phone Number (206)) 726-4704					
Mailing Address 1100 O	live Way, St	e 800	City	Seattle			State WA	Zip Code	98101			
3. Well Location												
Tax Parcel Number, Township, Range, Section,¼, and ¼ ¼ are Required. Latitude and longitude (if available).												
County Name Yakima - 39												
Well Site Street Address		321 S	Elm St.	City Top	penish		State WA	Zip Code	98948			
Tax Parcel Number	Township	Range Sect	ion 1/4	(within 160 acr	res) 1/4 -1/4	(within 4	0 acres)					
	10N	20E 4		SE		SE						
Latitude Degrees		Latitude Tir				Horizo	ntal Collection	Method				
			mi	n	sec							
Longitude Degrees		Longitude ⁻	Time									
			m	in	sec							
4. Estimated Start Date 9/9/2	2013 12:00:	00 AM	Projec	t Name W	/3-532 (9	9/3)			100 HP 10			
5. Professional's License Nur	mber								7777777			
6. Well Drilling Company Nar	me Ca	scade Drilling	LP (42	5)		Pho	ne Number No	one Supplied				
7. Well Driller Name					Driller License Number							
8. Send the entire form. Please copy the notification number (located in the upper and lower right corners) and keep in a safe place. Use this reference number when communicating with the Department of Ecology.												
Total Number of wells to be co	onstructed			This notifica	ition numb	oer must	be provided to y	our driller:				
Fee Amount: \$40.00 per well					R	RE08960)					
Total Number of wells =	4 ×	\$ 40 each							anne anno anno anno anno anno anno anno			
Total Due and Amount En	closed <u>\$</u>	160										
						cfull	er@cascadedr	rilling.com				
		-	cfuller@cascadedrilling.com Your Notice of Intent has been processed as of 9/6/2013. Your Cash Journal Validation Number is: 461S0293. This message being sent at (9/5/2013)									

ARCADIS

Appendix **C**

Field Notes and Field Logs

9/785 Tippinsh SOW: Borehele charmo (Form montoring news)

Newther: 68°F Sunny + Chlan

Perschool: Tumms Parise, Ryan Branchia, Cores mortgomeny. (ARLADIS)

TIO Amile in 540, den PPF, and cheek in noth

Station. Œ 54N7100. 750 Cuscade on site. Called Dety of Toppenish, sewer and 1005 Go over HABP, PTW, HRPTW and 4700 that with Chocais - Tim and Slawn. 110 Set up delineation and nact met at mw-7.

Centact when district - City of Toppenish question

10 Centact with of white makes no not onsite, coming brokent with from EPA in site to observe outside extension

2 one het goo meter and PID valibrato puri to start of work with 180 portylene by 100 ppm Standard. 1125 Bign anjak at MW-7.

City of toppingh stopped by again to diaws form and
South, then Most mark private property but

Stur connects in back of finishing and water

15 believed to run along landscape (south of site

to the north then connects at building). Not in proposed mu locations Œ Wells it soil for surring at It pen gravel 1140 PID rending 23 ppm
Discuss TIP with Cores montgomeny then he defaited.
mw-7 at 4ft cobbles, no PID rending unable to
collect with hand anyer. 1150 1155 MW-7 at 5/2-6th proble to collect sample due to 1200 copples. vactrick hot, take broak to cool down, also everyone rehydrate.

11785 9.9.2013 MW-7 at 6 feet bgs, could simple tok Sulming -cobbles, pengravel, asphalt (see bring/og). O. 3ppu Stop work at 8-81/2' The Jacuum hose was 1240 fully with peagement. Do utilities to that point. Pragravel starts from 5/2-8/8/21, at point of Collapse. Called Greg m. to discuss, ex to backful and move to next location. BOKFILL MW-7 from vac truck and 1255 path agplact move forward to mw-8 for burehile clemance 1310 Set up delinention MW-8 at 1' , DID healspire Oppon. 1320 at 2 , collect sample the snearing, 0.1 ppm 1335 O.O.PID KINSPILE 1410 MW-8 at 4', Cobbles, no sample for Smeaning Clemed mw-8 to 8' shipt collapse of colores 1415 during Cleaning, From JP Cobbles now from 7-8 Backfill May-8 and patch gout up delineators 1430 More vac track and dring to west skle of bulding to smpty soil the spream of and mw-8 1500 leave delineators in areas of mu 7 and mu 8 80 vehicles do not park over hom overnight. 1 Aum nw-7 and mn-8 from vacuent 91785-51-090913 (wante outland miles my same land 1510

70	ppenish	91	785	9.9	,2113	p3,	/3
1515	Check on Selver	t with	Stations	mploya	. Femine	AR IP	
1520	Deput						
Drma	inventory	EOB	1-soil a	uttings			
						/	
						1/-	
	3					/	
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	,						
						-	
		-					
1			1				4
			100	(3)			
				700			
		. ((M) ()				
Ÿ		DW					
			/	2			
							-
							;
		*				,	

91785 9.10.213 p1/2 Borchele Chemina MV-9 and MV-6 and Weight strong, clan 68°F, expect up to 90°F Folding rows. Desorrel: Thirmy Physic, Ryan Brunch (ARCADS) Cascade ML Crew - Sian and Tim I'm crate Dry con Armve on site Don The and soft updalineation 125 near MW-9 Caubrate PID and 4 gro meta WHI isobutylone 100 ppm stondard. Check in With Station. 750 Coscide vacoren on site. Goover PTW and their JEA For vacing 8 30 Begin Set up of delineation to other mw-9. Stop work mw-9 at 1'. One with preweth 845 electrical Cable unning NWSE direction. Called Grey montgomen, more location for south (see figure). Durking the and miknife no damage to Willtres. Herdspace reading mw-9 21 0.1 ppm thousand whome on mw-9 a 21 0.0 p Collect 11A Sample for full someoning. 905 930 Herespiel MW+9 3-31/21 0,1 ppm HA 4 for sikeening Hendsprie 71/2 MMV 0, 2 ppm Grad sample with HA Frim 6' Clence bring to 8', no utilities present, native 940 945 Brokfill initial mway and rumad majorg 1010 probok. Fuel delivery truck mired, want write departed to mob to mw. 6. Stop mil 1020

	Toppernish	91785		9.10	,2013	pR/3	· ·
1/15		10	ina tek	mobe	vis to		•
■ 8007 APPARTO	10011/10	+05 L	mahrle	C. Winano	2		•
1125	Set up	deline	tuin a	nd be ai	naipk	ek.	•
				0			C
1135	Herdspree	1,5' 0,	3ppm	6 (1			
1140	Collock Si	myle hi	rizi-tor	Tight sac	ening.		
1,150	PID NEW	ing at a	2,59	an			
1155	Collect Si PID News Collect Sh	mple at	- 4 TU	- Tield &	reening		
1200	Hendspra Difficult near 6	250	,2 ppm				
1215	Difficult	time go	they In	angh Cabil	es		C
8	near 6	, 0	\mathcal{O}	U			•
1225	Liviah bra			1			
1300	med din	- Taylar	to mety	3/4 /00	(,		
1315	RETURN	40 DI	V-6 10	Hear bor	ohole-		
1320	MU-6 A	to bomolo for	PIP Naci	spre 0.6	ppn:		
1330	PID N	hw 6 st	6' 1.1	opm	J		
	Eurent	M STOF	With Sha	Lt breeze	, takin		
	fragner	& breaks	to had	ite any	(let)		•
		WK WO					
	Oca .	1		000	11:01		
1410	Crace by	be Imen	gh abbl	es, Clevred	10 90	n MW-6.	
-	Put we	knife w	nd hose	huay,	then bu	Hill.	
1425	PATCH MI	1-60.10.00	y ANThom	brown be	nekele		•
1436	Thorn	al true	Linteral	nn all	1 Shalfi	2	•
1130	MUY-6	and m	W-9 ST	(cutting	,		•
			1				
1445	Attup +	rister-Can	sculle, se	us lone	l, and a	lepnt.	
1450	Seure 10	ord, re,	movePPE	icheck or	it with S	tation	
1530	meet Ca	ocale at	hotel to	inspect	dull rig	prior	(5.1
	to STW	UT FOR J	omorran	2. 00 0	VI 1515	wordt TOp	Culling .
	Nº Solety	mest y	is Well	70 STR	torry to	morrow	
11.20	and pa	rold hear	ta				
1630	Deput	HOASI.	taker.	cile -	2 Cirl 1	4	
	Dramin	- SI - NO	1011/W 0/	1 3000 -	X SOUL CL	ttings	
	0178	5-51-09 5-52-0	0/12				
	-11 1 ()	J J L - V	11119		J	1-	

91785 Toppenish 9.11.2013 SOW! Install four monitoring wars Weather! Chan 650F Personnel! Ryan & + Tanin & (APCAPIS)
(Would Crew - James, Marin, and Tin 600 pm Arrive on site, don PPE, chak in with station. DOLK of men to drill Sotteth of promp 15/12nd (MN-6, MW-7, and MW-8). Go over HASP, PTW, and HOSP toot. We went through Chacadis Drilling JSA. Prep track for MW-6 deiting 700 Chlibrate PID with 150bitylene to 100 ppn. 725 Bigin dulling mw-6. 11/ppm mw-6 8-442', 1.9 ppm 745 mw-6 91/2-11'0-7ppm NO recovery 11-12' mw-6 # 121/2-14'
mw-6 15-16', 20.0 ppm
mw-6 19-20' 225 ppm 750 13' DTW O. 7 ppm 810 Blyin setting montoring well mer - Bottom of toring 19%. Stering screen +0-20' 91/2 -191/2'. 815 Collected Samples at full Sample Containers for: 8,50 mw-62/2,5-14.5 750 MW-6 D 15-16.5 805 810 bottom of builing mw-6 2 19-20' 920 Collect sou from drams for waste profiling. Comp- I-S Drums 91785-53-091113 and 91785-54091113 905 more to mar 7 for milling, Same exclusion Tone, closed untito men solding of pump islands for MW-6, MW-7, and MW-8. Complete setting of monotoning all before morning of beginning MW-7 drilling 930 Bean duling at mw 7 PID= 3.8 ppm MW-7 9/2-11 935 940 PID= 1.6ppm

	91785-TOppenish	p2/3
950		
1000	MW-7215-16.5' PID=1257 pp MW-72 19,5-20' 9D=83.34	PM
1010		
1010	Since vuter is at 11', set well still 8-18' screen.	
	Collecting Samples from the following	
	Φ	
	MW-7 9-11.5' at 940 MW-7 15-16.5' at 950	
	mw-7 19.5-20 at 1000	bottom of boring
1025		
102)	Collect simple from drim for 91785-54-091113	vouge wife 2 3
1040	mob to mw-8, set well box at	
1055	Lower most and barn drilliam M	W-8.
1110	mw-8 2 8-9.5' herdspru 10:09 mw-8 2 9.5-11', water at 11	on, PID sample 100 ppm
1115	mw-8 a 9.5-11, water at 11	, norecovery
	50U dam 91785-55-091113	
1125	50 U dam 91765-55-09/173 mw-8 2 15-16.5' PD = 40.9	ppm
1130	MW-8 & 19-20.5' bottom of B	pring PID= 11.1
	Set monitary rell screen at 8-18'	
	Collect samples from the tollowin	9.'
	mw-8 20 8-9.5 1110	Most RN-1
U)	MW-8 2 15-16.5 1125 , COI MW-8 2 19-20.5 1130	
		1 (11 /2)
200	a1785-55-091113	e proting comp-3-5
	71709 00 1110	
1210	unch break	
1245	middling farlighte meeting	in a de Mala marini
1255	Mark Hora (chers) on Sitarjo	nex / wayse / mogny
10.5	nob water If duct my to MW-0	7.

91785- Toppenich 03/3 Once delineation set up at mw-9, byon drilling, 1336 mw-9 8-9,5', heidspan 0 1 ppm, 0,5 ppm-soil mw-9 9,5-11', water at approx. 10.7', 2.2 ppmson hundspare 0.2 ppm 1355 1400 mw-9 at 15-16.5', PID=1.8ppn mw-9 at 1915-21' PID=3.2ppn 1415 1420 Cabel dum for mw-9 Soul Cuttings 91785-56-09/1/3 FU Sample Ush towners for the Fellowing! 1430 MW-9 2 95-11 2 1400 MW-9 2 15-16.512 1415 MW-9 2 19.5-21 a bottom it boring 2/420 move drill rig out of ones of mw-9to 1510 sett Mw-9dellbox. Collect pH sample from decondrum 1545 Additional nates B-2 naised Stightly kespege of them, make need to resurface yesterdam Chrose Track Broke down upon heading down por at Jam, tom hours to Cascade muhameto show up and SWITTEN OUT Tracks. NO during started 10 phones Tubsday toptontaly able Disans TIP and chent comments werk (noccinto 1645 Remove PPE, source load, Drun huntory and depart deran water

- and Shawa Phonis.

9/1785 -Toppemen 9/12/13 p.1/1 1350 Arrive Mode with OTAK. Check in with station, Don PPE 50W: Sinvey Mis (MW-6-Mory) MW-9) and 546 features/ Westher: 90°F Personnel! Throm Parise (ARCADIS), Gabe and Jonathan 1430 Complete HABP, JSA and Aroun SOW. 6 1440 ppm MWS and place deliheators nem Gange each well while opening for survey crear. mw-6 DTW 11.60' MW-7 DTW 10.81' MW-8 DTW 10.94' MN-9 DW 10.42' 1500 Otak finished survey of oute features and locations, bondones. Begin TIP observation of OTAK. 1515 Gul brey mortgren - project managerabent gestration's during, chent discover and TIP. 1530 Complete on site sincey, walk off site to 1600 information to site, only if imade to locate property others on site unale to find makers 10 ata markers 1650 PRI up, seeme land, remove PPE

■ 10-8-2013 91785. Topperish
0:715 - Airrive on site, inform station management, Jon PPE
SOW& Develop and sample MW-6, MW-7, MW-8, & MW-9. Sample waste water.
Weather: Partly Cloudy \$ 45°F - AM; Partly Cloudy \$60°F - PM
Personnel & ARCADIS - R. Brauchla, J. DeJong; Cascade Drilling - Q. Graham, C. Asken, S. Form
■ 0730 - Perform Integy Meeting led by John De Jong)
0800 - Drillers begin developing MW6 (~20 gallons purged)
Drillers begin developing MW-7
0900 - ARCADIS collets MW-6 & DUP-1 samples
0905 - Dr. Iles begin developing MW-8.
0945 - ARCADIS collects MW-7 samples
D950 → Drillers begin developing MW-9
1030 - ARCADIS collects MW-8 samples
■ 1100 → ARCADIS collects MW-9 samples
1130 - ARCADIS collects WASTE sample
■ 1230 ■ ARCADIS off site to deliver samples to UPS
Methodology: Cascade drilling surged monitoring wells with a surge block then pumped the wells with a supmersible pump until purge water ran clear. ARCADIS collected GW samples via low-flow punge methods after ground water recovered completely. ARCADIS collected waste samples by compositing water from all the drums and putting it in the sample contine
Drum Inventory: (7) 55-gallon steel open-top, soil drums (3) 55-gallon steel closed-top, water drums (two generated today
The state of the s
"Lite in the Main". ALL-WEATHER WHITING PAPER

											Page 1	of <u>1</u>
Project No.	GP09B	PNA.WA	91785	-1	Well ID	MW-6	5	_ 0		Date	10/8/2	013
Project Name	e/Locatio	n Toppen	ish / 321	S.E	Im SF					Weather	50°F 105	rtly clour
Measuring Pt			Screen			Casing				Well Mate	erial X	PVC
Description	(black	mark)	Setting (ft-bmp)		031	Diameter (in.)		-				SS
Static Water Level (ft-btoc)	11.	93	Total Depth (ft-bt	oc) 19	15	Water Colum Gallons in We		/		Initial PID Reading (p	pm)	
TOC Elevatio	2.5		Pump Intake (ft-t	otoc)	18.97	Purge Metho	low-f	You De	urge	Sample		
Pump On/Off	0357	10905	Volumes Purgeo	d			Centrifugal Submersible			Method	grab	<u> </u>
Sample Time	: I abel	0990	Replicate/				Other	penshe	Trical	MP		
	Start		Code No.	DU	P-1	-			<i></i> =	Sampled	by RB	
	End	- H										
Time	Minutes Elapsed	Rate (gpm)	Depth to Water	Gallons Purged	рН	Cond. (μMhos)	Turbidity	Dissolved Oxygen	Temp.	Redox	Appea	rance
	Liapooa	(mL/min)	(ft)	. digod	C	(mS/cm)	(NTU)	(mg/L)	(°F)	(mV)	Color	Odor
083'7	TÔ.	400	11.93	9	6.37	363.1	: Milyanam	2.45	17.9	218.4	brown	1)0
0840	. 3			B	6,57	320.8		2.25	18.5	206.5	clear	<u> </u>
0843	6	250			6.64	3200	-	2.03	18.5	210,4	12	
0849	12	1			6.68	3164	_	1.98	18.5	214.2	cloudy.	il
VSIL					6.0 5	310.4		1.18	1010	- 1,		
									,			
73		6										
51	1 1	PLI	P) (0)	10	700							
,	, ,	1 L			100			-				
<u> </u>												
Constituents	Sample	d			Containe	r			Number		Preservat	tivo
oonoaraonto		NWTPH-	Gx			VOA			-3		HO	
8		ITBE by 82		_		VOA	200	_3	d	6	HCI	
	Total Le	ead by 601	0-	_		POLY			7	<u> </u>	HN0)3=
	Dissolve	ed Lead by	6010			POLY					none	>
	PX	Isilia	gel cleans	p)	1-L	ANDE	1	<u>-</u> z	_ (A	4	HC	1
		1		-				_0		_		
		6.5		- 10 00				_		_		
<u>-</u>				-0.0				-		-		
				-				-		_		
Well Casing Gallons/Foot	Volumes 1" = 0.04		.5" = 0.09	2.5" = 0.2	6 2	3.5" = 0.50	6" = 1.47					
Gallotia/FOOL	1.25" = 0.04		" = 0.16	3" = 0.37		1" = 0.65	J - 1.47					
Well Inform	ation											
Well Loca	ation:	south	of pump	islands			Well	Locked at	Arrival:	Yes	1	/No /
Condition of	of Well:	3/3	solts show				Well Loc	ked at De	parture: _	Yes	1	No
Well Comp	oletion:	F	Tush Mount	/ Stic	ck Up		Kev	Number 1	To Well:		to the second se	GW Sa

Ment N	110/	(m) 1 @	Oroanawak								Page 1	of <u>1</u>
Project No.	-GP09B	PNA WA	91785 ist/321 5.	-	Well ID	MW-	7	_		Date		12013
Project Name	e/Locatio	n Toppen	ish / 321 S.	Ein	St. To	opponish,	WA			Weather	50°F P	wtly (low
Measuring Pt Description	top of	casing mark)	Screen Setting (ft-bmp)			Casing Diameter (in.)		_		Well Mate	erial X	PVC SS
Static Water Level (ft-btoc)	11.1	4	Total Depth (ft-btr	oc) (7-	.65	Water Colum Gallons in W		11		Initial PID Reading (p	opm)	
TOC Elevation	n		Pump Intake (ft-b	otoc)		Purge Metho	low-fl	ow por-	12	Sample		
Pump On/Off	0922		Volumes Purgeo	t			Centrifugal Submersible	-		Method	grab	
Sample Time	: Label Start End	0945	Replicate/ Code No.	- Communication		-	Other	perista	ltic	Sampled	by RB	
Time	Minutes	(gpm)	Depth to Water	Gallons Purged	рН	Cond. (µMhos)	Turbidity	Dissolved Oxygen	(°C)	Redox	Appea	
0922	0	(mL/min)	(ft)	0	6.74	(mS/cm) 273. /	(NTU)	(mg/L)	(°F)	(mV)	Color	Odor
6925	3	300	11/17		6.51	73.7	_	1.94	188	24,4	Deren	10
0928	6				6.46	66.8		0.88	18.6	222.8		
0931	i c _j				6.46	66.7	-	778	18.7	223,1	hight	O do garage
0934	12				6.45	65.2	1	091	18.6	2238	13/1	- Chive envisor
0937	15				644	65.2	-	0.87	18.8	2241		-
0940	18				6,44	66.4	1	0.87	18.7	-	1	
54.	M	PLO		Ð	09	745						
Constituents		ed VNWTPH-	-Gx->		Containe	er -VOA			Number		Preservat	
	BTEX/N	ITBE by 8	260	_		VOA	190	_	3	_	HCI	
	Total Le	ead by 601	.0	-		POLY		_	4		< HNC	13-
		ed Lead b	y-6010	-		EOFA		_			< none	The state of the s
low silies gel claump)						Imber		_		-	HC	Ĺ
	- 10-15 - 10-1			-				-		- :		
Well Casing Gallons/Foot	Volume : 1" = 0.04 1.25" = 0.	1	.5" = 0.09 2" = 0.16	2.5" = 0.26 3" = 0.37		3.5" = 0.50 4" = 0.65	6" = 1.47				5	
Well Inform		150		1	444							
Well Loca		-tot	10 11 .	1903				Locked at	_	Yes		No
Condition of		good;	3/3 buits	7		Well Locked at Departure: Yes / No					No GW Samp	
Well Comp	oletion:		Flush Mount	ck Up		Key Number To Well:					Sw pamp	

											Page 1	of <u>1</u>
Project No.	GP09B	PNA.WA	91785	-	Well ID	MW-	8			Date	0/8/2	013
Project Name	/Locatio	n Toppe	wish / 3	215	. Elm	St. To	ppenis 5	. W/A	L	Weather	55°F 5	DAAY
Measuring Pt Description	· top of	, ,	Screen Setting (ft-bmp)			Casing Diameter (in.)	′/			Well Mate		_PVC SS
Static Water Level (ft-btoc)	1(.		Total Depth (ft-bt	oc)		Water Colum Gallons in W	Initial PID Reading (ppm)					
TOC Elevatio	n		Pump Intake (ft-t			Purge Metho	. //	nl. A. on	,	Sample	JIII) ——	-
Pump On/Off		Í	Volumes Purgeo			. a.go moaro	Centrifugal Submersible	1		Method	grab	·
	-	Insel		1	-		Other	perst	altie			
Sample Time	Start End	1030	Replicate/ Code No.	4		-		,		Sampled I	y RB	
Time	Minutes		Depth to	Gallons	рН	Cond.	Turbidity	Dissolved		Redox	Annes	ranca
	Elapsed	(gpm) (mL/min)	Water (ft)	Purged		(μMhos) (mS/cm)	(NTU)	Oxygen (mg/L)	(°C) (°F)	(mV)	Appea	Odor
1002	0	400		0	6.66	67.8	-	2.52	19,1	224.4	From	NO
1005	3				6.62	681		124	19.3	222.2	1	4
1008	6	V			6.55	69.6	-	1.25	19,1	221,9		ON HA PAGE
1011	9				6.57	68.6	_	0.77	18.4	222.3		
1014	12				6.55	69.3		0.61	18.7	223, 9		
1017	15	ļ			6.53	67.9		0.77	18.9	223. 1	(
1020	18				6.52	68.6		0.82	18.9	222.7		
1023	21				6.51	68.5	-	0.91	18.9	2225		11/
		2	3									
SA	W	P	(F)	(a)		/3						
- 1	· l	, _										
Constituents		o NWTPH-	ev=>		Containe	∀ 0Α			Number		Preservat	
-		ATBE by 8:		-		VOA			3	-	HCI	
		ead by 601		-	نے	POLY					FINC	B
		ed Lead by		-		POLY				-	none	
	PRO by	NWTP		-	1-1	Ambe			2	-	1-10	1
		7777		-								
				-								
Well Casing	Volumer			-						-		
Gallons/Foot	1" = 0.04 1.25" = 0.0	1	.5" = 0.09 " = 0.16	2.5" = 0.2 3" = 0.37		.5" = 0.50 " = 0.65	6" = 1.47					
Well Informa	ation						****					
Well Loca		next !	to gas price	ce su	1		. Well L	ocked at	Arrival:	Yes	1	(No)
Condition o		goodi	S/3 bolf	(C4i	ck Un		. Well Lock	ked at De _l	200 markets and 200 markets	Yes	1	No GW Sar

											Page 1	of <u>1</u>
Project No. *	GP09B	PNA.WA		-	Well ID	MW-9				Date	10/8/2	2013
Project Name	e/Locatio	n Toppe	wish 32	(S.	Elm S	+ Topp	erish, b	M		Weather	55°F, 8	partly clos
Measuring Pt Description		casing mark)	Screen Setting (ft-bmp)			Casing Diameter (in.)	2"	_		Well Mate	rial X	PVC SS
Static Water Level (ft-btoc)	10.5	73	Total Depth (ft-bt	oc) 18	00	Water Colum Gallons in W				Initial PID Reading (p	pm)	
TOC Elevation	n		Pump Intake (ft-t	otoc)		Purge Metho	low-flan	- pury	C	Sample	V	
Pump On/Off	1040	/	Volumes Purgeo	<u></u> t			Centrifugal Submersible	1 3		Method	grab	
Sample Time	: Label Start End	1101/	Replicate/ Code No.	g SandMoone	not confront and c	-1	Other	peristi	Stic	Sampled	by RB	
Time	Minutes Elapsed	(gpm)	Depth to Water	Gallons Purged	pН	Cond. (μMhos)	Turbidity	Dissolved Oxygen	(°C)	Redox	Appea	ZONIO DE LA CONTRACTOR DE
1040	(")	(mL/min)	(ft)	0	6.93	(mS/cm) 82.4	(NTU)	(mg/L)	(°F)	(mV)	Color	Odor
10 43	3	300			6.79	175.0	~	2.79	17.4	220 8	brown	AC I
1046	6				6.74	9586	_	2.88	14.4	21,3	light	
1049	9				6.73	255.9	-	2.98	7.2	221.2	clear	
1052	12	V			6.71	255.6	-	3.03	17.2	220.9		
1055	15				6.69	255.9		3:11	17.1	223, 9	1	J
ii .			1200									
												9
	1. 1	40	100			. 1						
	4/	VII)	111) /	6)		7					
21	1	11	LCF			110	6					
					8							
Constituents	- 15	ed y NWTPH-	0		Containe	r VOA			Number		Preservat	
		ATBE by 8	******	-		VOA	,	-	3	-	HCI	
_		ead by 601	Signer:	-		POLY		-	-	_	- HNO	3
		ed Lead b		-		ROLY		-8 -8	F	_	ñone	
	DRO 6	V NNT	PH-Dx	_	I-L	Amber		-	2		HCI	
	(4)	Silicas	releanup)	_		,		_		20		
			, ,	_				_				
		52.9%		-				-				
Well Casing Gallons/Foot	Volume: 1" = 0.04 1.25" = 0.	1	.5" = 0.09 " = 0.16	2.5" = 0.2 3" = 0.37		5.5" = 0.50 " = 0.65	6" = 1.47				***	
Well Inform		_										
Well Loca		cente	r of partin	va lot			Well I	Locked at	: Arrival:	Yes	1	(No
Condition of		nood i	3/3 50F5	7			Well Lock		_	Yes		No
Well Comr		7 /	Flush Mount	/ Sti	ck I In			Number -				GW Samp F

ARCADIS

Appendix **D**

Laboratory Analytical Reports

Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

ANALYTICAL RESULTS

Prepared by:

Prepared for:

Eurofins Lancaster Laboratories Environmental 2425 New Holland Pike Lancaster, PA 17601 Chevron L4310 6001 Bollinger Canyon Road San Ramon CA 94583

September 26, 2013

Project: 91785

Submittal Date: 09/13/2013 Group Number: 1418754 PO Number: 0015119898 Release Number: SHRILL HOPKINS State of Sample Origin: WA

Client Sample Description	<u>Lancaster Labs (LL) #</u>
MW-6@12.5'-14.5' Grab Soil	7196925
MW-6@15'-16.5' Grab Soil	7196926
MW-6@19'-20' Grab Soil	7196927
MW-7@9'-11.5' Grab Soil	7196928
MW-7@15-16.5' Grab Soil	7196929
MW-7@19.5-20' Grab Soil	7196930
MW-8@8-9.5' Grab Soil	7196931
MW-8@15-16.5' Grab Soil	7196932
MW-8@19-20.5' Grab Soil	7196933
BD-1 Grab Soil	7196934
MW-9@9.5-11' Grab Soil	7196935
MW-9@15-16.5' Grab Soil	7196936
MW-9@19.5-21' Grab Soil	7196937
Trip Blank MeOH	7196938

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

ELECTRONIC Arcadis COPY TO

Attn: Greg Montgomery

Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Respectfully Submitted,

Matalie X-2

Natalie R. Luciano Senior Specialist

(717) 556-7258



Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: MW-6@12.5'-14.5' Grab Soil

Facility# 91785

321 S Elm St - Toppenish, WA

LL Sample # SW 7196925 LL Group # 1418754 Account # 11964

Project Name: 91785

Submitted: 09/13/2013 09:20

Reported: 09/26/2013 12:40

Collected: 09/11/2013 07:50 by TP Chevron

L4310

6001 Bollinger Canyon Road

San Ramon CA 94583

TPP61

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit	Dilution Factor			
GC Vol	latiles	ECY 97-602	NWTPH-Gx	mg/kg	mg/kg				
02006	NWTPH-GX Soil C7-C12	2	n.a.	N.D.	1.1	23.6			
GC Vol	latiles	SW-846 802	1B	mg/kg	mg/kg				
08179	Benzene		71-43-2	N.D.	0.0054	23.6			
08179	Ethylbenzene		100-41-4	N.D.	0.0054	23.6			
08179	MTBE		1634-04-4	N.D.	0.054	23.6			
08179	Toluene		108-88-3	N.D.	0.0054	23.6			
08179	Total Xylenes		1330-20-7	N.D.	0.016	23.6			
GC Pet	troleum	ECY 97-602	NWTPH-Dx	mg/kg	mg/kg				
Hydrod	carbons w/Si	modified							
12006	DRO C12-C24 w/Si Gel	L	n.a.	N.D.	3.4	1			
12006	HRO C24-C40 w/Si Gel	L	n.a.	N.D.	11	1			
The :	reverse surrogate, ca	pric acid, is	present at <19	हे.					
Wet Cl	nemistry	SM 2540 G-	1997	8	%				
00111	Moisture		n.a.	12.3	0.50	1			
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.								

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tir	me	Analyst	Dilution Factor
02006	NWTPH-Gx soil C7-C12	ECY 97-602 NWTPH- Gx	1	13263A31A	09/20/2013	21:58	Laura M Krieger	23.6
08179	BTEX/MTBE by 8021	SW-846 8021B	1	13263A31A	09/20/2013	21:58	Laura M Krieger	23.6
06647	GC-5g Field Preserved MeOH	SW-846 5035	1	201325632393	09/11/2013	07:50	Client Supplied	n.a.
12006	NWTPH-Dx soil w/ 10g Si Gel	ECY 97-602 NWTPH- Dx modified	1	132620028A	09/25/2013	12:35	Christine E Dolman	1
12008	NW Dx soil w/ 10g column	ECY 97-602 NWTPH- Dx 06/97	1	132620028A	09/20/2013	12:25	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	13262820003A	09/19/2013	19.24	Scott W Freisher	1



Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: MW-6@15'-16.5' Grab Soil

Facility# 91785

321 S Elm St - Toppenish, WA

LL Sample # SW 7196926 LL Group # 1418754

Account # 11964

Project Name: 91785

Submitted: 09/13/2013 09:20

Reported: 09/26/2013 12:40

Collected: 09/11/2013 08:05 by TP Chevron

L4310

6001 Bollinger Canyon Road

San Ramon CA 94583

TPP62

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit	Dilution Factor
GC Vo	latiles	ECY 97-602	NWTPH-Gx	mg/kg	mg/kg	
02006	NWTPH-GX Soil C7-C1	2	n.a.	2.1	1.2	25.46
GC Vo	latiles	SW-846 802	1B	mg/kg	mg/kg	
08179	Benzene		71-43-2	N.D.	0.0059	25.46
08179	Ethylbenzene		100-41-4	N.D.	0.0059	25.46
08179	MTBE		1634-04-4	N.D.	0.059	25.46
08179	Toluene		108-88-3	0.0064	0.0059	25.46
08179	Total Xylenes		1330-20-7	N.D.	0.018	25.46
GC Pe	troleum	ECY 97-602	NWTPH-Dx	mg/kg	mg/kg	
Hydro	carbons w/Si	modified				
12006	DRO C12-C24 w/Si Ge	1	n.a.	N.D.	3.5	1
	HRO C24-C40 w/Si Ge		n.a.	N.D.	12	1
The	reverse surrogate, ca	pric acid, is	present at <1	%.		
Wet C	nemistry	SM 2540 G-	1997	%	%	
00111	Moisture		n.a.	14.3	0.50	1
	Moisture represents	the loss in w	eight of the s	ample after oven drying at		
	103 - 105 degrees Coas-received basis.					

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory	Sample	Analysis	Record
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CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
02006	NWTPH-Gx soil C7-C12	ECY 97-602 NWTPH- Gx	1	13263A31A	09/20/2013	22:34	Laura M Krieger	25.46
08179	BTEX/MTBE by 8021	SW-846 8021B	1	13263A31A	09/20/2013	22:34	Laura M Krieger	25.46
06647	GC-5g Field Preserved MeOH	SW-846 5035	1	201325632393	09/11/2013	08:05	Client Supplied	n.a.
12006	NWTPH-Dx soil w/ 10g Si Gel	ECY 97-602 NWTPH- Dx modified	1	132620028A	09/25/2013	12:55	Christine E Dolman	1
12008	NW Dx soil w/ 10g column	ECY 97-602 NWTPH- Dx 06/97	1	132620028A	09/20/2013	12:25	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	132628200034	09/19/2013	19.24	Scott W Freisher	1



Analysis Report

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Sample Description: MW-6@19'-20' Grab Soil

Facility# 91785

321 S Elm St - Toppenish, WA

LL Sample # SW 7196927 LL Group # 1418754

Account # 11964

Project Name: 91785

Submitted: 09/13/2013 09:20

Reported: 09/26/2013 12:40

Collected: 09/11/2013 08:10 by TP Chevron

L4310

6001 Bollinger Canyon Road

San Ramon CA 94583

TPP63

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit	Dilution Factor
GC Vo	latiles	ECY 97-602	NWTPH-Gx	mg/kg	mg/kg	
02006	NWTPH-GX Soil C7-C1	2	n.a.	N.D.	1.6	29.5
GC Vo	latiles	SW-846 802	1B	mg/kg	mg/kg	
08179	Benzene		71-43-2	N.D.	0.0080	29.5
08179	Ethylbenzene		100-41-4	N.D.	0.0080	29.5
08179	MTBE		1634-04-4	N.D.	0.080	29.5
08179	Toluene		108-88-3	N.D.	0.0080	29.5
08179	Total Xylenes		1330-20-7	N.D.	0.024	29.5
GC Pe	troleum	ECY 97-602	NWTPH-Dx	mg/kg	mg/kg	
Hydro	carbons w/Si	modified				
12006	DRO C12-C24 w/Si Ge	1	n.a.	N.D.	4.0	1
12006	HRO C24-C40 w/Si Ge	1	n.a.	N.D.	13	1
The	reverse surrogate, c	apric acid, is	present at <15	È.		
Wet C	hemistry	SM 2540 G-	1997	%	%	
00111	Moisture		n.a.	25.9	0.50	1
	Moisture represents	the loss in w	eight of the s	ample after oven drying at		
	103 - 105 degrees Cas-received basis.					

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tir	me	Analyst	Dilution Factor
02006	NWTPH-Gx soil C7-C12	ECY 97-602 NWTPH- Gx	1	13263A31A	09/20/2013	23:10	Laura M Krieger	29.5
08179	BTEX/MTBE by 8021	SW-846 8021B	1	13263A31A	09/20/2013	23:10	Laura M Krieger	29.5
06647	GC-5g Field Preserved MeOH	SW-846 5035	1	201325632393	09/11/2013	08:10	Client Supplied	n.a.
12006	NWTPH-Dx soil w/ 10g Si Gel	ECY 97-602 NWTPH- Dx modified	1	132620028A	09/25/2013	13:16	Christine E Dolman	1
12008	NW Dx soil w/ 10g column	ECY 97-602 NWTPH- Dx 06/97	1	132620028A	09/20/2013	12:25	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	13262820003A	09/19/2013	19.24	Scott W Freisher	1



Analysis Report

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Sample Description: MW-7@9'-11.5' Grab Soil

Facility# 91785

321 S Elm St - Toppenish, WA

LL Sample # SW 7196928 LL Group # 1418754

Account # 11964

Project Name: 91785

Submitted: 09/13/2013 09:20

Reported: 09/26/2013 12:40

Collected: 09/11/2013 09:40 by TP Chevron

L4310

6001 Bollinger Canyon Road

San Ramon CA 94583

TPP71

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit	Dilution Factor
GC Vo	latiles	ECY 97-602	NWTPH-Gx	mg/kg	mg/kg	
02006	NWTPH-GX Soil C7-C12		n.a.	N.D.	0.8	19.49
GC Vo	latiles	SW-846 802	1B	mg/kg	mg/kg	
08179	Benzene		71-43-2	N.D.	0.0042	19.49
08179	Ethylbenzene		100-41-4	N.D.	0.0042	19.49
08179	MTBE		1634-04-4	N.D.	0.042	19.49
08179	Toluene		108-88-3	0.0053	0.0042	19.49
08179	Total Xylenes		1330-20-7	N.D.	0.013	19.49
GC Pe	troleum	ECY 97-602	NWTPH-Dx	mg/kg	mg/kg	
Hydro	carbons w/Si	modified				
12006	DRO C12-C24 w/Si Gel		n.a.	N.D.	3.2	1
12006	HRO C24-C40 w/Si Gel		n.a.	13	11	1
The	reverse surrogate, cap	pric acid, is	present at <1	%.		
Wet C	hemistry	SM 2540 G-	1997	%	%	
00111	Moisture		n.a.	7.2	0.50	1
	Moisture represents	the loss in w	eight of the s	sample after oven drying at		
	103 - 105 degrees Ce as-received basis.	lsius. The mo	isture result	reported is on an		

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tim	ne	Analyst	Dilution Factor
02006	NWTPH-Gx soil C7-C12	ECY 97-602 NWTPH- Gx	1	13263A31A	09/20/2013	23:47	Laura M Krieger	19.49
08179	BTEX/MTBE by 8021	SW-846 8021B	1	13263A31A	09/20/2013	23:47	Laura M Krieger	19.49
06647	GC-5g Field Preserved MeOH	SW-846 5035	1	201325632393	09/11/2013	09:40	Client Supplied	n.a.
12006	NWTPH-Dx soil w/ 10g Si Gel	ECY 97-602 NWTPH- Dx modified	1	132620028A	09/25/2013	15:14	Christine E Dolman	1
12008	NW Dx soil w/ 10g column	ECY 97-602 NWTPH- Dx 06/97	1	132620028A	09/20/2013	12:25	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	13262820003A	09/19/2013	19.24	Scott W Freisher	1



Analysis Report

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Sample Description: MW-7@15-16.5' Grab Soil

Facility# 91785

321 S Elm St - Toppenish, WA

LL Sample # SW 7196929

LL Group # 1418754 Account # 11964

Project Name: 91785

Reported: 09/26/2013 12:40

Collected: 09/11/2013 09:50 by TP Chevron

L4310

Submitted: 09/13/2013 09:20 6001 Bollinger Canyon Road

San Ramon CA 94583

TPP72

CAT No.	Analysis Name		CAS Number	Dry Result	Method Detection Limit	Dilution Factor
GC Vo	latiles	ECY 97-	602 NWTPH-Gx	mg/kg	mg/kg	
02006	NWTPH-GX Soil C7-C	12	n.a.	340	23	490.81
GC Vo	latiles	SW-846	8021B	mg/kg	mg/kg	
08179	Benzene		71-43-2	N.D.	0.26	98.16
08179	Ethylbenzene		100-41-4	0.70	0.023	98.16
08179	MTBE		1634-04-4	N.D.	0.56	98.16
08179	Toluene		108-88-3	N.D.	0.54	98.16
08179	Total Xylenes		1330-20-7	6.6	0.068	98.16
Repo	rting limits were ra	aised due t	o interference fr	om the sample mat	rix.	
GC Pe	troleum	ECY 97-	602 NWTPH-Dx	mg/kg	mg/kg	
Hydro	carbons w/Si	modifie	ed			
12006	DRO C12-C24 w/Si G	el	n.a.	N.D.	3.5	1
	HRO C24-C40 w/Si G		n.a.	N.D.	12	1
The	reverse surrogate, o	capric acid	, is present at <	1%.		
Wet C	hemistry	SM 2540	G-1997	%	%	
00111	Moisture		n.a.	13.6	0.50	1
	Moisture represent 103 - 105 degrees as-received basis.					

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
02006	NWTPH-Gx soil C7-C12	ECY 97-602 NWTPH- Gx	1	13263A31B	09/23/2013	21:14	Marie D Beamenderfer	490.81
08179	BTEX/MTBE by 8021	SW-846 8021B	1	13263A31C	09/24/2013	20:28	Laura M Krieger	98.16
06647	GC-5g Field Preserved MeOH	SW-846 5035	1	201325632393	09/11/2013	09:50	Client Supplied	n.a.
12006	NWTPH-Dx soil w/ 10g Si Gel	ECY 97-602 NWTPH- Dx modified	1	132620028A	09/25/2013	13:35	Christine E Dolman	1
12008	NW Dx soil w/ 10g column	ECY 97-602 NWTPH- Dx 06/97	1	132620028A	09/20/2013	12:25	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	13262820003A	09/19/2013	19:24	Scott W Freisher	1



Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: MW-7@19.5-20' Grab Soil

Facility# 91785

321 S Elm St - Toppenish, WA

LL Sample # SW 7196930 LL Group # 1418754

Account # 11964

Project Name: 91785

Reported: 09/26/2013 12:40

Collected: 09/11/2013 10:00 by TP Chevron

L4310

Submitted: 09/13/2013 09:20 6001 Bollinger Canyon Road

San Ramon CA 94583

TPP73

CAT No.	Analysis Name		CAS Number	Dry Result	Method Detection Limit	Dilution Factor
GC Vo	latiles	ECY 97-	602 NWTPH-Gx	mg/kg	mg/kg	
02006	NWTPH-GX Soil C7-C	12	n.a.	93	6.5	112.92
GC Vo	latiles	SW-846	8021B	mg/kg	mg/kg	
08179	Benzene		71-43-2	N.D.	0.048	28.23
08179	Ethylbenzene		100-41-4	0.15	0.0081	28.23
08179	MTBE		1634-04-4	N.D.	0.081	28.23
08179	Toluene		108-88-3	N.D.	0.12	28.23
08179	Total Xylenes		1330-20-7	1.3	0.024	28.23
Repo	rting limits were ra	ised due t	o interference fr	om the sample ma	trix.	
GC Pe	troleum	ECY 97-	602 NWTPH-Dx	mg/kg	mg/kg	
Hydro	carbons w/Si	modifie	e d			
12006	DRO C12-C24 w/Si Ge	el	n.a.	N.D.	4.3	1
	HRO C24-C40 w/Si Ge		n.a.	N.D.	14	1
The	reverse surrogate, o	apric acid	, is present at <	:1%.		
Wet C	hemistry	SM 2540	G-1997	8	%	
00111	Moisture		n.a.	30.7	0.50	1
	Moisture represents 103 - 105 degrees (as-received basis.					

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
02006	NWTPH-Gx soil C7-C12	ECY 97-602 NWTPH- Gx	1	13263A31B	09/24/2013	00:19	Marie D Beamenderfer	112.92
08179	BTEX/MTBE by 8021	SW-846 8021B	1	13263A31C	09/24/2013	21:04	Laura M Krieger	28.23
06647	GC-5g Field Preserved MeOH	SW-846 5035	1	201325632393	09/11/2013	10:00	Client Supplied	n.a.
12006	NWTPH-Dx soil w/ 10g Si Gel	ECY 97-602 NWTPH- Dx modified	1	132620028A	09/25/2013	13:55	Christine E Dolman	1
12008	NW Dx soil w/ 10g column	ECY 97-602 NWTPH- Dx 06/97	1	132620028A	09/20/2013	12:25	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	13262820003A	09/19/2013	19:24	Scott W Freisher	1



Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: MW-8@8-9.5' Grab Soil

Facility# 91785

321 S Elm St - Toppenish, WA

LL Sample # SW 7196931 LL Group # 1418754

Account # 11964

Project Name: 91785

Reported: 09/26/2013 12:40

Collected: 09/11/2013 11:10 by TP Chevron

L4310

Submitted: 09/13/2013 09:20 6001 Bollinger Canyon Road

San Ramon CA 94583

TPP81

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit	Dilution Factor				
GC Vo	latiles	ECY 97-602	NWTPH-Gx	mg/kg	mg/kg					
02006	NWTPH-GX Soil C7-C1	2	n.a.	23	1.1	27.06				
GC Vo	latiles	SW-846 802	1B	mg/kg	mg/kg					
08179	Benzene		71-43-2	N.D.	0.0056	27.06				
08179	Ethylbenzene		100-41-4	0.018	0.0056	27.06				
08179	MTBE		1634-04-4	N.D.	0.056	27.06				
08179	Toluene		108-88-3	0.014	0.0056	27.06				
08179	Total Xylenes		1330-20-7	0.12	0.017	27.06				
GC Petroleum ECY 97-602 NWTPH-Dx mg/kg mg/kg										
Hydro	carbons w/Si	modified								
12006	DRO C12-C24 w/Si Ge	l	n.a.	17	3.1	1				
12006	HRO C24-C40 w/Si Ge		n.a.	18	10	1				
The	reverse surrogate, ca	pric acid, is	present at <19	è.						
Wet C	hemistry	SM 2540 G-	1997	8	%					
00111	Moisture		n.a.	4.1	0.50	1				
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.									

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tir	me	Analyst	Dilution Factor
02006	NWTPH-Gx soil C7-C12	ECY 97-602 NWTPH- Gx	1	13263A31A	09/21/2013	05:49	Laura M Krieger	27.06
08179	BTEX/MTBE by 8021	SW-846 8021B	1	13263A31A	09/21/2013	05:49	Laura M Krieger	27.06
06647	GC-5g Field Preserved MeOH	SW-846 5035	1	201325632393	09/11/2013	11:10	Client Supplied	n.a.
12006	NWTPH-Dx soil w/ 10g Si Gel	ECY 97-602 NWTPH- Dx modified	1	132620028A	09/25/2013	15:34	Christine E Dolman	1
12008	NW Dx soil w/ 10g column	ECY 97-602 NWTPH- Dx 06/97	1	132620028A	09/20/2013	12:25	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	13262820003A	09/19/2013	19.24	Scott W Freisher	1



Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: MW-8@15-16.5' Grab Soil

Facility# 91785

321 S Elm St - Toppenish, WA

LL Sample # SW 7196932 LL Group # 1418754

Account # 11964

Project Name: 91785

Submitted: 09/13/2013 09:20

Reported: 09/26/2013 12:40

Collected: 09/11/2013 11:25 by TP Chevron

L4310

6001 Bollinger Canyon Road

San Ramon CA 94583

TPP82

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit	Dilution Factor
GC Vo	latiles	ECY 97-602	NWTPH-Gx	mg/kg	mg/kg	
02006	NWTPH-GX Soil C7-C1	2	n.a.	2.5	1.2	24.97
GC Vo	latiles	SW-846 802	1B	mg/kg	mg/kg	
08179	Benzene		71-43-2	N.D.	0.0061	24.97
08179	Ethylbenzene		100-41-4	N.D.	0.0061	24.97
08179	MTBE		1634-04-4	N.D.	0.061	24.97
08179	Toluene		108-88-3	0.0095	0.0061	24.97
08179	Total Xylenes		1330-20-7	N.D.	0.018	24.97
GC Pe	troleum	ECY 97-602	NWTPH-Dx	mg/kg	mg/kg	
Hydro	carbons w/Si	modified				
12006	DRO C12-C24 w/Si Ge	1	n.a.	N.D.	3.6	1
	HRO C24-C40 w/Si Ge		n.a.	N.D.	12	1
The	reverse surrogate, ca	pric acid, is	present at <19	हे.		
Wet C	hemistry	SM 2540 G-	1997	8	%	
00111	Moisture		n.a.	18.0	0.50	1
	Moisture represents	the loss in w	veight of the s	ample after oven drying at		
	103 - 105 degrees Coas-received basis.	elsius. The mo	oisture result	reported is on an		

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory	Sample	Analysis	Record
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CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tir	me	Analyst	Dilution Factor
02006	NWTPH-Gx soil C7-C12	ECY 97-602 NWTPH- Gx	1	13263A31A	09/21/2013	00:23	Laura M Krieger	24.97
08179	BTEX/MTBE by 8021	SW-846 8021B	1	13263A31A	09/21/2013	00:23	Laura M Krieger	24.97
06647	GC-5g Field Preserved MeOH	SW-846 5035	1	201325632393	09/11/2013	11:25	Client Supplied	n.a.
12006	NWTPH-Dx soil w/ 10g Si Gel	ECY 97-602 NWTPH- Dx modified	1	132620028A	09/25/2013	14:15	Christine E Dolman	1
12008	NW Dx soil w/ 10g column	ECY 97-602 NWTPH- Dx 06/97	1	132620028A	09/20/2013	12:25	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	13262820003A	09/19/2013	19.24	Scott W Freisher	1



Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: MW-8@19-20.5' Grab Soil

Facility# 91785

321 S Elm St - Toppenish, WA

LL Sample # SW 7196933 LL Group # 1418754

Account # 11964

Project Name: 91785

Reported: 09/26/2013 12:40

Collected: 09/11/2013 11:30 by TP Chevron

L4310

Submitted: 09/13/2013 09:20 6001 Bollinger Canyon Road

San Ramon CA 94583

TPP83

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit	Dilution Factor
GC Vol	latiles	ECY 97-602	NWTPH-Gx	mg/kg	mg/kg	
02006	NWTPH-GX Soil C7-C12	2	n.a.	N.D.	1.3	25.92
GC Vol	latiles	SW-846 802	1B	mg/kg	mg/kg	
08179	Benzene		71-43-2	N.D.	0.0064	25.92
08179	Ethylbenzene		100-41-4	N.D.	0.0064	25.92
08179	MTBE		1634-04-4	N.D.	0.064	25.92
08179	Toluene		108-88-3	N.D.	0.0064	25.92
08179	Total Xylenes		1330-20-7	N.D.	0.019	25.92
GC Pet	croleum	ECY 97-602	NWTPH-Dx	mg/kg	mg/kg	
Hydrod	carbons w/Si	modified				
12006	DRO C12-C24 w/Si Ge	l	n.a.	N.D.	3.7	1
12006	HRO C24-C40 w/Si Ge	l	n.a.	N.D.	12	1
The :	reverse surrogate, ca	pric acid, is	present at <1	è.		
Wet Ch	nemistry	SM 2540 G-	1997	8	%	
00111	Moisture		n.a.	19.2	0.50	1
	Moisture represents 103 - 105 degrees Co as-received basis.		_	ample after oven drying at reported is on an		

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tir	me	Analyst	Dilution Factor
02006	NWTPH-Gx soil C7-C12	ECY 97-602 NWTPH- Gx	1	13263A31B	09/23/2013	23:42	Marie D Beamenderfer	25.92
08179	BTEX/MTBE by 8021	SW-846 8021B	1	13263A31B	09/23/2013	23:42	Marie D Beamenderfer	25.92
06647	GC-5g Field Preserved MeOH	SW-846 5035	1	201325632393	09/11/2013	11:30	Client Supplied	n.a.
12006	NWTPH-Dx soil w/ 10g Si Gel	ECY 97-602 NWTPH- Dx modified	1	132620028A	09/25/2013	14:35	Christine E Dolman	1
12008	NW Dx soil w/ 10g column	ECY 97-602 NWTPH- Dx 06/97	1	132620028A	09/20/2013	12:25	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	13262820003A	09/19/2013	19:24	Scott W Freisher	1



Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: BD-1 Grab Soil

Facility# 91785

321 S Elm St - Toppenish, WA

LL Sample # SW 7196934 LL Group # 1418754

Account # 11964

Project Name: 91785

Collected: 09/11/2013 by TP Chevron

L4310

Submitted: 09/13/2013 09:20 6001 Bollinger Canyon Road

San Ramon CA 94583

Reported: 09/26/2013 12:40

TPPBD

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit	Dilution Factor				
GC Vo	latiles	ECY 97-602	NWTPH-Gx	mg/kg	mg/kg					
02006	NWTPH-GX Soil C7-C1:	2	n.a.	2.5	1.2	24.09				
GC Volatiles SW-846 8021B			mg/kg	mg/kg						
08179	Benzene		71-43-2	N.D.	0.0060	24.09				
08179	Ethylbenzene		100-41-4	N.D.	0.0060	24.09				
08179	MTBE		1634-04-4	N.D.	0.060	24.09				
08179	Toluene		108-88-3	0.0097	0.0060	24.09				
08179	Total Xylenes		1330-20-7	N.D.	0.018	24.09				
GC Pe	troleum	ECY 97-602	NWTPH-Dx	mg/kg	mg/kg					
Hydro	carbons w/Si	modified								
12006	DRO C12-C24 w/Si Ge	1	n.a.	N.D.	3.7	1				
	HRO C24-C40 w/Si Ge		n.a.	N.D.	12	1				
The	reverse surrogate, ca	pric acid, is	present at <1	ે .						
Wet C	hemistry	SM 2540 G-	1997	%	%					
00111	Moisture		n.a.	20.0	0.50	1				
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.									

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
02006	NWTPH-Gx soil C7-C12	ECY 97-602 NWTPH-Gx	1	13263A31A	09/21/2013		Laura M Krieger	24.09
08179	BTEX/MTBE by 8021	SW-846 8021B	1	13263A31A	09/21/2013	01:35	Laura M Krieger	24.09
06647	GC-5g Field Preserved MeOH	SW-846 5035	1	201325632393	09/11/2013	00:00	Client Supplied	n.a.
12006	NWTPH-Dx soil w/ 10g Si Gel	ECY 97-602 NWTPH- Dx modified	1	132620028A	09/25/2013	14:55	Christine E Dolman	1
12008	NW Dx soil w/ 10g column	ECY 97-602 NWTPH- Dx 06/97	1	132620028A	09/20/2013	12:25	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	13262820003A	09/19/2013	19:24	Scott W Freisher	1



Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: MW-9@9.5-11' Grab Soil

Facility# 91785

321 S Elm St - Toppenish, WA

LL Sample # SW 7196935

LL Group # 1418754 Account # 11964

Project Name: 91785

Submitted: 09/13/2013 09:20

Reported: 09/26/2013 12:40

Collected: 09/11/2013 14:00 by TP Chevron

L4310

6001 Bollinger Canyon Road

San Ramon CA 94583

TPP91

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit	Dilution Factor			
GC Vol	latiles	ECY 97-602	NWTPH-Gx	mg/kg	mg/kg				
02006	NWTPH-GX Soil C7-C12	2	n.a.	N.D.	1.0	24.19			
GC Vol	latiles	SW-846 802	1B	mg/kg	mg/kg				
08179	Benzene		71-43-2	N.D.	0.0051	24.19			
08179	Ethylbenzene		100-41-4	N.D.	0.0051	24.19			
08179	MTBE		1634-04-4	N.D.	0.051	24.19			
08179	Toluene		108-88-3	N.D.	0.0051	24.19			
08179	Total Xylenes		1330-20-7	N.D.	0.015	24.19			
GC Pet	croleum	ECY 97-602	NWTPH-Dx	mg/kg	mg/kg				
Hydrod	carbons w/Si	modified							
12006	DRO C12-C24 w/Si Gel	L	n.a.	N.D.	3.1	1			
12006	HRO C24-C40 w/Si Gel	L	n.a.	N.D.	10	1			
The :	reverse surrogate, ca	pric acid, is	present at <19	È.					
Wet Ch	nemistry	SM 2540 G-	1997	8	%				
00111	Moisture		n.a.	4.5	0.50	1			
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.								

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT	Analysis Name	Method	Trial#	Batch#	Analysis		Analyst	Dilution
No.					Date and Ti	me		Factor
02006	NWTPH-Gx soil C7-C12	ECY 97-602 NWTPH- Gx	1	13263A31A	09/21/2013	02:12	Laura M Krieger	24.19
08179	BTEX/MTBE by 8021	SW-846 8021B	1	13263A31A	09/21/2013	02:12	Laura M Krieger	24.19
06647	GC-5g Field Preserved MeOH	SW-846 5035	1	201325632393	09/11/2013	14:00	Client Supplied	n.a.
12006	NWTPH-Dx soil w/ 10g Si Gel	ECY 97-602 NWTPH- Dx modified	1	132660018A	09/25/2013	10:14	Christine E Dolman	1
12008	NW Dx soil w/ 10g column	ECY 97-602 NWTPH- Dx 06/97	1	132660018A	09/24/2013	09:30	David S Schrum	1
00111	Moisture	SM 2540 G-1997	1	13262820003A	09/19/2013	19.24	Scott W Freisher	1



Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: MW-9@15-16.5' Grab Soil

Facility# 91785

321 S Elm St - Toppenish, WA

LL Sample # SW 7196936

LL Group # 1418754 Account # 11964

Project Name: 91785

Submitted: 09/13/2013 09:20

Reported: 09/26/2013 12:40

Collected: 09/11/2013 14:15 by TP Chevron

L4310

6001 Bollinger Canyon Road

San Ramon CA 94583

TPP92

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit	Dilution Factor
GC Vo	latiles	ECY 97-602	NWTPH-Gx	mg/kg	mg/kg	
02006	NWTPH-GX Soil C7-C1:	2	n.a.	N.D.	1.1	24.68
GC Vo	latiles	SW-846 802	1B	mg/kg	mg/kg	
08179	Benzene		71-43-2	N.D.	0.0055	24.68
08179	Ethylbenzene		100-41-4	N.D.	0.0055	24.68
08179	MTBE		1634-04-4	N.D.	0.055	24.68
08179	Toluene		108-88-3	N.D.	0.0055	24.68
08179	Total Xylenes		1330-20-7	N.D.	0.017	24.68
GC Pe	troleum	ECY 97-602	NWTPH-Dx	mg/kg	mg/kg	
Hydro	carbons w/Si	modified				
12006	DRO C12-C24 w/Si Ge	1	n.a.	N.D.	3.4	1
12006	HRO C24-C40 w/Si Ge	1	n.a.	N.D.	11	1
The	reverse surrogate, ca	pric acid, is	present at <1	ે .		
Wet C	hemistry	SM 2540 G-	1997	8	%	
00111	Moisture		n.a.	10.6	0.50	1
	Moisture represents 103 - 105 degrees Co as-received basis.		_	ample after oven drying at reported is on an		

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory	Sample	Analysis	Record
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CAT	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
02006	NWTPH-Gx soil C7-C12	ECY 97-602 NWTPH-Gx	1	13263A31A		02:48	Laura M Krieger	24.68
08179	BTEX/MTBE by 8021	SW-846 8021B	1	13263A31A	09/21/2013	02:48	Laura M Krieger	24.68
06647	GC-5g Field Preserved MeOH	SW-846 5035	1	201325632393	09/11/2013	14:15	Client Supplied	n.a.
12006	NWTPH-Dx soil w/ 10g Si Gel	ECY 97-602 NWTPH- Dx modified	1	132660018A	09/25/2013	09:33	Christine E Dolman	1
12008	NW Dx soil w/ 10g column	ECY 97-602 NWTPH- Dx 06/97	1	132660018A	09/24/2013	09:30	David S Schrum	1
00111	Moisture	SM 2540 G-1997	1	13262820003A	09/19/2013	19:24	Scott W Freisher	1



Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: MW-9@19.5-21' Grab Soil

Facility# 91785

321 S Elm St - Toppenish, WA

LL Sample # SW 7196937

LL Group # 1418754 Account # 11964

Project Name: 91785

Submitted: 09/13/2013 09:20

Reported: 09/26/2013 12:40

Collected: 09/11/2013 14:20 by TP Chevron

L4310

6001 Bollinger Canyon Road

San Ramon CA 94583

TPP93

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit	Dilution Factor
GC Vol	Latiles EC	Y 97-602	NWTPH-Gx	mg/kg	mg/kg	
02006	NWTPH-GX Soil C7-C12		n.a.	N.D.	1.0	23.26
GC Vol	Latiles SW	-846 802	1B	mg/kg	mg/kg	
08179	Benzene		71-43-2	N.D.	0.0052	23.26
08179	Ethylbenzene		100-41-4	N.D.	0.0052	23.26
08179	MTBE		1634-04-4	N.D.	0.052	23.26
08179	Toluene		108-88-3	N.D.	0.0052	23.26
08179	Total Xylenes		1330-20-7	N.D.	0.016	23.26
GC Pet	roleum EC	Y 97-602	NWTPH-Dx	mg/kg	mg/kg	
Hydrod	carbons w/Si mo	dified				
12006	DRO C12-C24 w/Si Gel		n.a.	N.D.	3.3	1
12006	HRO C24-C40 w/Si Gel		n.a.	N.D.	11	1
The :	reverse surrogate, capri	c acid, is	present at <19	₹.		
Wet Cl	nemistry SM	2540 G-	1997	8	%	
00111	Moisture		n.a.	10.4	0.50	1
	Moisture represents the 103 - 105 degrees Cels: as-received basis.		_	ample after oven drying at reported is on an		

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory	Sample	Analysis	Record
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CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tim	ne	Analyst	Dilution Factor
02006	NWTPH-Gx soil C7-C12	ECY 97-602 NWTPH- Gx	1	13263A31A	09/21/2013	03:24	Laura M Krieger	23.26
08179	BTEX/MTBE by 8021	SW-846 8021B	1	13263A31A	09/21/2013	03:24	Laura M Krieger	23.26
06647	GC-5g Field Preserved MeOH	SW-846 5035	1	201325632394	09/11/2013	14:20	Client Supplied	n.a.
12006	NWTPH-Dx soil w/ 10g Si Gel	ECY 97-602 NWTPH- Dx modified	1	132660018A	09/25/2013	09:54	Christine E Dolman	1
12008	NW Dx soil w/ 10g column	ECY 97-602 NWTPH- Dx 06/97	1	132660018A	09/24/2013	09:30	David S Schrum	1
00111	Moisture	SM 2540 G-1997	1	13262820003A	09/19/2013	19.24	Scott W Freisher	1



Analysis Report

Account

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Sample Description: Trip Blank MeOH

Facility# 91785

321 S Elm St - Toppenish, WA

LL Sample # SW 7196938 LL Group # 1418754

11964

Project Name: 91785

Collected: 09/11/2013 Chevron

L4310

Submitted: 09/13/2013 09:20 6001 Bollinger Canyon Road

Reported: 09/26/2013 12:40 San Ramon CA 94583

TPPT1

CAT No.	Analysis Name		CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
GC Vol	latiles	ECY 97-	602 NWTPH-Gx	mg/kg	mg/kg	
02006	NWTPH-GX Soil C7-C12	2	n.a.	N.D.	1.0	25
GC Vol	latiles	SW-846	8021B	mg/kg	mg/kg	
08179	Benzene		71-43-2	N.D.	0.0050	25
08179	Ethylbenzene		100-41-4	N.D.	0.0050	25
08179	MTBE		1634-04-4	N.D.	0.050	25
08179	Toluene		108-88-3	N.D.	0.0050	25
08179	Total Xylenes		1330-20-7	N.D.	0.015	25

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02006	NWTPH-Gx soil C7-C12	ECY 97-602 NWTPH-	1	13263A31A	09/21/2013 05:13	Laura M Krieger	25
08179	BTEX/MTBE by 8021	Gx SW-846 8021B	1	13263A31A	09/21/2013 05:13	Laura M Krieger	25
06647	GC-5g Field Preserved	SW-846 5035	1	201325632394	09/11/2013 00:00	Client Supplied	n.a.
06647	MeOH GC-5g Field Preserved MeOH	SW-846 5035	2	201325632394	09/11/2013 00:00	Client Supplied	n.a.

Analysis Report

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Page 1 of 3

Quality Control Summary

Client Name: Chevron Group Number: 1418754

Reported: 09/26/13 at 12:40 PM

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Laboratory Compliance Quality Control

<u>Analysis Name</u>	Blank <u>Result</u>	Blank <u>MDL</u>	Report <u>Units</u>	LCS <u>%REC</u>	LCSD %REC	LCS/LCSD <u>Limits</u>	RPD	RPD Max
Batch number: 13263A31A	Sample numbe	er(s): 719	6925-7196	928,719693	31-7196932	,7196934-71	96938	
Benzene	N.D.	0.0050	mq/kq	108	109	80-120	1	30
Ethylbenzene	N.D.	0.0050	mg/kg	107	109	80-120	1	30
MTBE	N.D.	0.050	mg/kg	112	116	72-120	4	30
NWTPH-GX Soil C7-C12	N.D.	1.0	mg/kg	73	77	65-120	5	30
Toluene	N.D.	0.0050	mg/kg	105	106	80-120	1	30
Total Xylenes	N.D.	0.015	mg/kg	107	109	80-120	2	30
Batch number: 13263A31B	Sample numbe	er(s): 719		930,719693	33			
Benzene	N.D.	0.0050	mg/kg	108	109	80-120	1	30
Ethylbenzene	N.D.	0.0050	mg/kg	107	109	80-120	1	30
MTBE	N.D.	0.050	mg/kg	112	116	72-120	4	30
NWTPH-GX Soil C7-C12	N.D.	1.0	mg/kg	73	77	65-120	5	30
Toluene	N.D.	0.0050	mg/kg	105	106	80-120	1	30
Total Xylenes	N.D.	0.015	mg/kg	107	109	80-120	2	30
Batch number: 13263A31C	Sample numbe			930				
Benzene	N.D.	0.0050	mg/kg	108	109	80-120	1	30
Ethylbenzene	N.D.	0.0050	mg/kg	107	109	80-120	1	30
MTBE	N.D.	0.050	mg/kg	112	116	72-120	4	30
Toluene	N.D.	0.0050	mg/kg	105	106	80-120	1	30
Total Xylenes	N.D.	0.015	mg/kg	107	109	80-120	2	30
Batch number: 132620028A	Sample numbe	er(s): 719	6925-7196	934				
DRO C12-C24 w/Si Gel	N.D.	3.0	mg/kg	79		50-133		
HRO C24-C40 w/Si Gel	N.D.	10.	mg/kg					
Batch number: 132660018A	Sample numbe	er(s): 719	6935-7196	937				
DRO C12-C24 w/Si Gel	N.D.	3.0	mg/kg	80		50-133		
HRO C24-C40 w/Si Gel	N.D.	10.	mg/kg					
Batch number: 13262820003A	Sample numbe	er(s): 719	6925-7196					
Moisture				100		99-101		

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike Background (BKG) = the sample used in conjunction with the duplicate

	MS	MSD	MS/MSD		RPD	BKG	DUP	DUP	Dup RPD
Analysis Name	%REC	%REC	<u>Limits</u>	RPD	MAX	Conc	Conc	RPD	<u>Max</u>

- *- Outside of specification
- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.

Analysis Report

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Page 2 of 3

Quality Control Summary

Client Name: Chevron Group Number: 1418754

Reported: 09/26/13 at 12:40 PM

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike Background (BKG) = the sample used in conjunction with the duplicate

	MS	MSD	MS/MSD		RPD	BKG	DUP	DUP	Dup RPD
Analysis Name Batch number: 132620028A	%REC	%REC	<u>Limits</u> : 7196925	<u>RPD</u> -719693	MAX A BKC	<u>Conc</u>	Conc	<u>RPD</u>	<u>Max</u>
DRO C12-C24 w/Si Gel	Sampre	number (s)	. /150525	- /19093	T DIG	N.D.	N.D.	0 (1)	20
HRO C24-C40 w/Si Gel						N.D.	N.D.	0 (1)	20
Batch number: 132660018A	Sample	number(s)	: 7196935	-719693	7 BKG	: 7196935			
DRO C12-C24 w/Si Gel						N.D.	N.D.	0 (1)	20
HRO C24-C40 w/Si Gel						N.D.	N.D.	0 (1)	20
Batch number: 13262820003A	Sample	number(s)	: 7196925	-719693	7 BKG				
Moisture						40.4	41.0	2	5

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: Method 8021 Soil Master Batch number: 13263A31A Trifluorotoluene-F Trifluorotoluene D

	minuorototuene-r	Tillidolotoluene-P
7196925	63	85
7196926	57*	78
7196927	55*	78
7196928	56*	77
7196931	67	86
7196932	54*	75
7196934	43*	60
7196935	65	92
7196936	63	87
7196937	59*	78
7196938	74	99
Blank	81	107
LCS	76	98
LCSD	78	96
Limits:	61-122	50-139

Analysis Name: Method 8021 Soil Master

Batch nu	mber: 13263A31B			
	Trifluorotoluene-F	Trifluorotoluene-P		
7196929	163*			
7196930	71			
7196933	63	83		
Blank	79	106		
LCS	76	98		
LCSD	78	96		
Limits:	61-122	50-139		

*- Outside of specification

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.



Analysis Report

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Page 3 of 3

Quality Control Summary

Client Name: Chevron Group Number: 1418754

Reported: 09/26/13 at 12:40 PM

Surrogate Quality Control

Analysis Name: Method 8021 Soil Master Batch number: 13263A31C

Trifluorotoluene-P

7196929 134 7196930 73 Blank 106 LCS 98 LCSD 96

Limits: 50-139

Analysis Name: NWTPH-Dx soil w/ 10g Si Gel

Batch number: 132620028A

Orthoterphenyl

Limits: 50-150

Analysis Name: NWTPH-Dx soil w/ 10g Si Gel

Batch number: 132660018A

Orthoterphenyl

7196935 105 7196936 98 7196937 96 Blank 100 DUP 109 LCS 109

Limits: 50-150

- *- Outside of specification
- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.

Chevron Northwest Region Analysis Request/Chain of Custody

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Chevron Northwest Region Analysis Request/Chain of Custody

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Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	BMQL	Below Minimum Quantitation Level
N.D.	none detected	MPN	Most Probable Number
TNTC	Too Numerous To Count	CP Units	cobalt-chloroplatinate units
IU	International Units	NTU	nephelometric turbidity units
umhos/cm	micromhos/cm	ng	nanogram(s)
С	degrees Celsius	F	degrees Fahrenheit
meq	milliequivalents	lb.	pound(s)
g	gram(s)	kg	kilogram(s)
μg	microgram(s)	mg	milligram(s)
mL	milliliter(s)	L	liter(s)
m3	cubic meter(s)	μL	microliter(s)
		pg/L	picogram/liter

- < less than The number following the sign is the <u>limit of quantitation</u>, the smallest amount of analyte which can be reliably determined using this specific test.
- > greater than
- ppm parts per million One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.
- ppb parts per billion
- **Dry weight**basis
 Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Data Qualifiers:

C - result confirmed by reanalysis.

J - estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

U.S. EPA CLP Data Qualifiers:

	Organic Qualifiers		Inorganic Qualifiers
Α	TIC is a possible aldol-condensation product	В	Value is <crdl, but="" th="" ≥idl<=""></crdl,>
В	Analyte was also detected in the blank	Ε	Estimated due to interference
С	Pesticide result confirmed by GC/MS	M	Duplicate injection precision not met
D	Compound quantitated on a diluted sample	N	Spike sample not within control limits
E	Concentration exceeds the calibration range of	S	Method of standard additions (MSA) used
	the instrument		for calculation
N	Presumptive evidence of a compound (TICs only)	U	Compound was not detected
Р	Concentration difference between primary and	W	Post digestion spike out of control limits
	confirmation columns >25%	*	Duplicate analysis not within control limits
U	Compound was not detected	+	Correlation coefficient for MSA < 0.995
X,Y,Z	Defined in case narrative		

Analytical test results meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR part 136 Table II as "analyze immediately" are not performed within 15 minutes.

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Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

ANALYTICAL RESULTS

Prepared by:

Prepared for:

Eurofins Lancaster Laboratories Environmental 2425 New Holland Pike Lancaster, PA 17601 Chevron L4310 6001 Bollinger Canyon Road San Ramon CA 94583

October 17, 2013

Project: 91785

Submittal Date: 10/09/2013 Group Number: 1425002 PO Number: 0015119898 Release Number: SHRILL HOPKINS State of Sample Origin: WA

Client Sample Description	<u>Lancaster Labs (LL) #</u>
MW-6 Grab Groundwater	7229938
MW-7 Grab Groundwater	7229939
MW-8 Grab Groundwater	7229940
MW-9 Grab Groundwater	7229941
DUP-1 Grab Groundwater	7229942
Trip Blank NA Water	7229943

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

ELECTRONIC Arcadis COPY TO

Attn: Greg Montgomery

Respectfully Submitted,

Matalie K-2

Natalie R. Luciano Senior Specialist

(717) 556-7258



Analysis Report

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Sample Description: MW-6 Grab Groundwater

Facility# 91785

321 S. Elm St. - Toppenish, WA

LL Sample # WW 7229938 LL Group # 1425002

Account # 11964

Project Name: 91785

Submitted: 10/09/2013 09:30

Reported: 10/17/2013 17:52

Collected: 10/08/2013 09:00 by RB Chevron

L4310

6001 Bollinger Canyon Road

San Ramon CA 94583

SET06

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
GC/MS	Volatiles SW-846	8260B	ug/l	ug/l	
10943	Benzene	71-43-2	N.D.	0.5	1
10943	Ethylbenzene	100-41-4	N.D.	0.5	1
10943	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.5	1
10943	Toluene	108-88-3	N.D.	0.5	1
10943	Xylene (Total)	1330-20-7	N.D.	0.5	1
GC Vol	Latiles ECY 97	-602 NWTPH-Gx	ug/l	ug/l	
08273	NWTPH-Gx water C7-C12	n.a.	89	50	1
	croleum ECY 97	-602 NWTPH-Dx	ug/l	ug/l	
12005	DRO C12-C24 w/Si Gel	n.a.	N.D.	29	1
12005	HRO C24-C40 w/Si Gel	n.a.	N.D.	68	1
The 1	reverse surrogate, capric acio	d, is present at <	L%.		

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time		Analyst	Dilution Factor
10943	BTEX/MTBE 8260 Water	SW-846 8260B	1	D132892AA	10/16/2013 15	:28	Daniel H Heller	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	D132892AA	10/16/2013 15	:28	Daniel H Heller	1
08273	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH- Gx	1	13283A07A	10/10/2013 19	:45	Catherine J Schwarz	1
01146	GC VOA Water Prep	SW-846 5030B	1	13283A07A	10/10/2013 19	:45	Catherine J Schwarz	1
12005	NWTPH-Dx water w/ 10g Si Gel	ECY 97-602 NWTPH- Dx modified	1	132840001A	10/16/2013 08	:58	Christine E Dolman	. 1
12007	NW Dx water w/ 10g column	ECY 97-602 NWTPH- Dx 06/97	1	132840001A	10/11/2013 22	:15	Karen L Beyer	1



Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: MW-7 Grab Groundwater

Facility# 91785

321 S. Elm St. - Toppenish, WA

LL Sample # WW 7229939

LL Group # 1425002 Account # 11964

Project Name: 91785

Submitted: 10/09/2013 09:30

Reported: 10/17/2013 17:52

Collected: 10/08/2013 09:45 by RB Chevron

L4310

6001 Bollinger Canyon Road

San Ramon CA 94583

SET07

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
GC/MS	Volatiles SW-846	8260B	ug/l	ug/l	
10943	Benzene	71-43-2	5	0.5	1
10943	Ethylbenzene	100-41-4	3	0.5	1
10943	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.5	1
10943	Toluene	108-88-3	N.D.	0.5	1
10943	Xylene (Total)	1330-20-7	39	0.5	1
GC Vol	latiles ECY 97-	-602 NWTPH-Gx	ug/l	ug/l	
08273	NWTPH-Gx water C7-C12	n.a.	2,000	50	1
	croleum ECY 97- carbons w/Si modifie	-602 NWTPH-Dx	ug/l	ug/l	
12005	DRO C12-C24 w/Si Gel	n.a.	74	29	1
12005	HRO C24-C40 w/Si Gel	n.a.	N.D.	68	1
The :	reverse surrogate, capric acid	d, is present at <1	.8.		

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10943	BTEX/MTBE 8260 Water	SW-846 8260B	1	D132892AA	10/16/2013	15:50	Daniel H Heller	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	D132892AA	10/16/2013	15:50	Daniel H Heller	1
08273	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH- Gx	1	13283A07A	10/10/2013	20:11	Catherine J Schwarz	1
01146	GC VOA Water Prep	SW-846 5030B	1	13283A07A	10/10/2013	20:11	Catherine J Schwarz	1
12005	NWTPH-Dx water w/ 10g Si Gel	ECY 97-602 NWTPH- Dx modified	1	132840001A	10/16/2013	09:18	Christine E Dolman	. 1
12007	NW Dx water w/ 10g column	ECY 97-602 NWTPH- Dx 06/97	1	132840001A	10/11/2013	22:15	Karen L Beyer	1



Analysis Report

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Sample Description: MW-8 Grab Groundwater

Facility# 91785

321 S. Elm St. - Toppenish, WA

LL Sample # WW 7229940 LL Group # 1425002

Account # 11964

Project Name: 91785

Submitted: 10/09/2013 09:30

Reported: 10/17/2013 17:52

Collected: 10/08/2013 10:30 by RB Chevron

L4310

6001 Bollinger Canyon Road

San Ramon CA 94583

SET-8

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
GC/MS	Volatiles SW-8	46 8260B	ug/l	ug/l	
10943	Benzene	71-43-2	N.D.	0.5	1
10943	Ethylbenzene	100-41-4	0.6	0.5	1
10943	Methyl Tertiary Butyl Eth	er 1634-04-4	N.D.	0.5	1
10943	Toluene	108-88-3	N.D.	0.5	1
10943	Xylene (Total)	1330-20-7	0.7	0.5	1
GC Vol	latiles ECY	97-602 NWTPH-Gx	ug/l	ug/l	
08273	NWTPH-Gx water C7-C12	n.a.	440	50	1
	croleum ECY carbons w/Si modi	97-602 NWTPH-Dx fied	ug/l	ug/l	
12005	DRO C12-C24 w/Si Gel	n.a.	N.D.	29	1
12005	HRO C24-C40 w/Si Gel	n.a.	N.D.	69	1
The :	reverse surrogate, capric	acid, is present at <	1%.		

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	9	Analyst	Dilution Factor
10943	BTEX/MTBE 8260 Water	SW-846 8260B	1	D132892AA	10/16/2013 1	16:13	Daniel H Heller	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	D132892AA	10/16/2013 1	16:13	Daniel H Heller	1
08273	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH- Gx	1	13283A07A	10/10/2013 2	20:36	Catherine J Schwarz	1
01146	GC VOA Water Prep	SW-846 5030B	1	13283A07A	10/10/2013 2	20:36	Catherine J Schwarz	1
12005	NWTPH-Dx water w/ 10g Si Gel	ECY 97-602 NWTPH- Dx modified	1	132840001A	10/16/2013 0	9:39	Christine E Dolman	1
12007	NW Dx water w/ 10g column	ECY 97-602 NWTPH- Dx 06/97	1	132840001A	10/11/2013 2	22:15	Karen L Beyer	1



Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: MW-9 Grab Groundwater

Facility# 91785

321 S. Elm St. - Toppenish, WA

LL Sample # WW 7229941 LL Group # 1425002

Account # 11964

Project Name: 91785

Submitted: 10/09/2013 09:30

Reported: 10/17/2013 17:52

Collected: 10/08/2013 11:00 by RB Chevron

L4310

6001 Bollinger Canyon Road

San Ramon CA 94583

SET-9

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
GC/MS	Volatiles SW-8	16 8260B	ug/l	ug/l	
10943	Benzene	71-43-2	N.D.	0.5	1
10943	Ethylbenzene	100-41-4	N.D.	0.5	1
10943	Methyl Tertiary Butyl Ethe	er 1634-04-4	N.D.	0.5	1
10943	Toluene	108-88-3	N.D.	0.5	1
10943	Xylene (Total)	1330-20-7	N.D.	0.5	1
GC Vol	latiles ECY :	97-602 NWTPH-Gx	ug/l	ug/l	
08273	NWTPH-Gx water C7-C12	n.a.	N.D.	50	1
	croleum ECY :	97-602 NWTPH-Dx fied	ug/l	ug/l	
12005	DRO C12-C24 w/Si Gel	n.a.	N.D.	29	1
12005	HRO C24-C40 w/Si Gel	n.a.	N.D.	67	1
The :	reverse surrogate, capric a	cid, is present at <	1%.		

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	•	Analyst	Dilution Factor
10943	BTEX/MTBE 8260 Water	SW-846 8260B	1	D132892AA	10/16/2013 1	6:36	Daniel H Heller	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	D132892AA	10/16/2013 1	6:36	Daniel H Heller	1
08273	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH- Gx	1	13283A07A	10/10/2013 2	21:02	Catherine J Schwarz	1
01146	GC VOA Water Prep	SW-846 5030B	1	13283A07A	10/10/2013 2	21:02	Catherine J Schwarz	1
12005	NWTPH-Dx water w/ 10g Si Gel	ECY 97-602 NWTPH- Dx modified	1	132840001A	10/16/2013 0	9:59	Christine E Dolman	. 1
12007	NW Dx water w/ 10g column	ECY 97-602 NWTPH- Dx 06/97	1	132840001A	10/11/2013 2	22:15	Karen L Beyer	1



Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: DUP-1 Grab Groundwater

Facility# 91785

321 S. Elm St. - Toppenish, WA

LL Sample # WW 7229942

LL Group # 1425002 Account # 11964

Project Name: 91785

Submitted: 10/09/2013 09:30

Reported: 10/17/2013 17:52

Collected: 10/08/2013 by RB Chevron

L4310

6001 Bollinger Canyon Road

San Ramon CA 94583

SETFD

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
GC/MS	Volatiles SW-846	8260B	ug/l	ug/l	
10943	Benzene	71-43-2	N.D.	0.5	1
10943	Ethylbenzene	100-41-4	N.D.	0.5	1
10943	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.5	1
10943	Toluene	108-88-3	N.D.	0.5	1
10943	Xylene (Total)	1330-20-7	N.D.	0.5	1
GC Vol	latiles ECY 97	-602 NWTPH-Gx	ug/l	ug/l	
08273	NWTPH-Gx water C7-C12	n.a.	N.D.	50	1
	croleum ECY 97 carbons w/Si modifi	-602 NWTPH-Dx	ug/l	ug/l	
12005	DRO C12-C24 w/Si Gel	n.a.	N.D.	29	1
12005	HRO C24-C40 w/Si Gel	n.a.	N.D.	67	1
The 1	reverse surrogate, capric acio	d, is present at <	L%.		

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tim	ne	Analyst	Dilution Factor
10943	BTEX/MTBE 8260 Water	SW-846 8260B	1	D132892AA	10/16/2013	16:59	Daniel H Heller	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	D132892AA	10/16/2013	16:59	Daniel H Heller	1
08273	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH- Gx	1	13283A07A	10/10/2013	21:28	Catherine J Schwarz	1
01146	GC VOA Water Prep	SW-846 5030B	1	13283A07A	10/10/2013	21:28	Catherine J Schwarz	1
12005	NWTPH-Dx water w/ 10g Si Gel	ECY 97-602 NWTPH- Dx modified	1	132840001A	10/16/2013	10:19	Christine E Dolman	1
12007	NW Dx water w/ 10g column	ECY 97-602 NWTPH- Dx 06/97	1	132840001A	10/11/2013	22:15	Karen L Beyer	1



Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: Trip Blank NA Water

Facility# 91785

321 S. Elm St. - Toppenish, WA

LL Sample # WW 7229943 LL Group # 1425002

Account # 11964

Project Name: 91785

Reported: 10/17/2013 17:52

Collected: 10/08/2013 Chevron

L4310

Submitted: 10/09/2013 09:30 6001 Bollinger Canyon Road

San Ramon CA 94583

SETTR

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
GC/MS	Volatiles SW-846 8	8260B	ug/l	ug/l	
10943	Benzene	71-43-2	N.D.	0.5	1
10943	Ethylbenzene	100-41-4	N.D.	0.5	1
10943	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.5	1
10943	Toluene	108-88-3	N.D.	0.5	1
10943	Xylene (Total)	1330-20-7	N.D.	0.5	1
GC Vol	latiles ECY 97-6	602 NWTPH-Gx	ug/l	ug/l	
08273	NWTPH-Gx water C7-C12	n.a.	N.D.	50	1

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	9	Analyst	Dilution Factor
10943	BTEX/MTBE 8260 Water	SW-846 8260B	1	D132892AA	10/16/2013 1	5:05	Daniel H Heller	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	D132892AA	10/16/2013 1	.5:05	Daniel H Heller	1
08273	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH- Gx	1	13283A07A	10/10/2013 1	8:54	Catherine J Schwarz	1
01146	GC VOA Water Prep	SW-846 5030B	1	13283A07A	10/10/2013 1	.8:54	Catherine J Schwarz	1

Analysis Report

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Quality Control Summary

Client Name: Chevron Group Number: 1425002

Reported: 10/17/13 at 05:52 PM

 $\hbox{Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise$ specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Laboratory Compliance Quality Control

Analysis Name	Blank <u>Result</u>	Blank <u>MDL</u>	Report <u>Units</u>	LCS <u>%REC</u>	LCSD %REC	LCS/LCSD <u>Limits</u>	RPD	RPD Max
Batch number: D132892AA	Sample nu	mber(s): 72	29938-7229	943				
Benzene	N.D.	0.5	uq/l	86		78-120		
Ethylbenzene	N.D.	0.5	ug/l	102		79-120		
Methyl Tertiary Butyl Ether	N.D.	0.5	ug/l	90		75-120		
Toluene	N.D.	0.5	ug/l	100		80-120		
Xylene (Total)	N.D.	0.5	ug/l	100		80-120		
Batch number: 13283A07A	Sample nu	mber(s): 72	29938-7229	943				
NWTPH-Gx water C7-C12	N.D.	50.	ug/l	93	98	75-135	5	30
Batch number: 132840001A	Sample nu	mber(s): 72	29938-7229	942				
DRO C12-C24 w/Si Gel	N.D.	30.	uq/l	72	77	32-117	7	20
HRO C24-C40 w/Si Gel	N.D.	70.	uq/l					

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS <u>%REC</u>	MSD %REC	MS/MSD <u>Limits</u>	<u>RPD</u>	RPD <u>MAX</u>	BKG <u>Conc</u>	DUP <u>Conc</u>	DUP <u>RPD</u>	Dup RPD <u>Max</u>
Batch number: D132892AA	Sample	number(s)	: 7229938	-722994	3 UNSP	K: P229860			
Benzene	87	91	72-134	4	30				
Ethylbenzene	-143	-19 (2)	71-134	5	30				
-	(2)								
Methyl Tertiary Butyl Ether	86	89	72-126	3	30				
Toluene	91	97	80-125	3	30				
Xylene (Total)	-46 (2)	11 (2)	79-125	9	30				

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: UST VOCs by 8260B - Water Batch number: D132892AA

Dibromofluoromethane 1,2-Dichloroethane-d4 Toluene-d8 4-Bromofluorobenzene

*- Outside of specification

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.



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Quality Control Summary

	Name: Chevron ed: 10/17/13 at	05:52 PM		1425002	
			Surrogate	Quality	Control
7229938 7229940 7229941 7229942 7229943 Blank LCS MS MSD	100 100 99 100 100 99 100 100 101 99	105 98 101 101 102 103 100 102 105 101	108 108 108 106 106 106 108 106 109 108	97 100 97 95 95 94 95 98 100 99	
	Name: NWTPH-Gx wa mber: 13283A07A Trifluorotoluene-F	ter C7-C12			
7229938 7229939 7229940 7229941 7229942 7229943 Blank LCS LCSD	86 104 93 85 82 87 90 96				
Limits:	63-135				
	Name: NWTPH-Dx wa mber: 132840001A Orthoterphenyl	ter w/ 10g Si Gel			
7229938 7229939 7229940 7229941 7229942 Blank LCS LCSD	75 94 79 78 92 92 84				

*- Outside of specification

Limits: 50-150

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.

Chevron Northwest Region Analysis Request/Chain of Custody

eurofins Lancaster Laboratories	Acct.#	1196	4(Group # Fo	1350 ns on rever	ster Labo 202 se side corr	ratories _ Sampl espond with	use only le # h circled nu	299 umbers.	38-	.43			
	n	4	Matrix		5		Anal	yses F	Request	ed			 SCR#:	
Client Information Facility # 91785 Site Address 321 S. Elm St., Toppenis Chevron PM Mark Horne Consultant/Office ARCADIS Consultant Project Mgr. Greg Montgomery Consultant Phone # 206-325-5254 Sampler Ryan Branchla 2 Sample Identification MW-6 MW-7 MW-8 MW-9 DVP-1 -Field Blank Trip per R. Pranchla Mr. Miller	Collected Date Time 10/8/13 0945 > 10/8/13 1030 >	X X X Grab Composite	XXXX Water NPDES Surface	Containers	8021 🕅 8260 😿 Naphth 🗌	8260 full scan	X >	X X X X X X X X X X X X X X X X X X X	WAVPH ☐ WAEPH ☐				Results in Dry Weig J value reporting not limits possible for 8 compounds 8021 MTBE Confirm Confirm MTBE + N Confirm all hits by 8 Run	eeded 260 mation aphthalene by 8260 3260 on highest hit on all hits
7 Turnaround Time Requested (TAT Standard 5 day 72 hour 48 hour	(please circle) 4 day	elinquished b	100	<u>//</u>	Date 10-9 Date	8-13	Time 143 Time	30	Received b	y	1		Date Date	Time 9
8 Data Package Options (please ci	(Raw Data)	UPS_		FedEx		Other			Received b	sh	<u>(</u>		_ Date 10/9/13	936
arthurded arc R.	Branchla 10/10/13	Ter	mperature	Upon Re	ceipt_	0.9-	<u>1.3°C</u>		Custo	dy Se	eals Int	act?	(Yes)	No



Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	BMQL	Below Minimum Quantitation Level
N.D.	none detected	MPN	Most Probable Number
TNTC	Too Numerous To Count	CP Units	cobalt-chloroplatinate units
IU	International Units	NTU	nephelometric turbidity units
umhos/cm	micromhos/cm	ng	nanogram(s)
С	degrees Celsius	F	degrees Fahrenheit
meq	milliequivalents	lb.	pound(s)
g	gram(s)	kg	kilogram(s)
μg	microgram(s)	mg	milligram(s)
mĹ	milliliter(s)	Ĺ	liter(s)
m3	cubic meter(s)	μL	microliter(s)
		pg/L	picogram/liter

- < less than The number following the sign is the <u>limit of quantitation</u>, the smallest amount of analyte which can be reliably determined using this specific test.
- > greater than

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.

ppb parts per billion

Dry weightbasis
Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Data Qualifiers:

C - result confirmed by reanalysis.

J - estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

U.S. EPA CLP Data Qualifiers:

	Organic Qualifiers		Inorganic Qualifiers
Α	TIC is a possible aldol-condensation product	В	Value is <crdl, but="" th="" ≥idl<=""></crdl,>
В	Analyte was also detected in the blank	Ε	Estimated due to interference
С	Pesticide result confirmed by GC/MS	M	Duplicate injection precision not met
D	Compound quantitated on a diluted sample	N	Spike sample not within control limits
Ε	Concentration exceeds the calibration range of	S	Method of standard additions (MSA) used
	the instrument		for calculation
N	Presumptive evidence of a compound (TICs only)	U	Compound was not detected
Р	Concentration difference between primary and	W	Post digestion spike out of control limits
	confirmation columns >25%	*	Duplicate analysis not within control limits
U	Compound was not detected	+	Correlation coefficient for MSA < 0.995
X,Y,Z	Defined in case narrative		

Analytical test results meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR part 136 Table II as "analyze immediately" are not performed within 15 minutes.

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